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Zoonomia: or the Law of Animal Life. A Lecture delivered at the Smithsonian Institute, Washington, U. S., on March the 8th, 1853. By MARSHALL HALL, M. D., F. R. S., Foreign Associate of the "Académie de Médecine" of Paris, &c. &c.

GENTLEMEN,—I congratulate myself on the opportunity afforded me, by your kind invitation, to unfold a principle in physiology on which I have long meditated and experimented, and which I have ventured to designate the Law of Animal Life.

Many have been the attempts to define *life*. All have, I think, proved abortive. I shall not, in my turn, venture to attempt that in which so many have failed. My object will be rather to describe than to define.

Life, then, may be justly viewed as consisting in a comprehensive system of action and re-action—of the action of certain physical and chemical influences, and the re-action of certain vital powers in organized beings.

Throughout the animal, and, indeed, the vegetable kingdoms,

the *primary* organic agents and re-agents are *pollen* and *ova*. Life first consists in the reciprocal action of these upon each other. Such is the very type and essence of life in its earliest dawn. Harvey said—Omne vivum ab *ovo*. He might, with equal truth, have said, Omne vivum a *polline;* and with still greater truth, Omne vivum a polline *et* ovo.

Each of them—the pollen, the ovum—was originally a *creation*. Their mutual and reciprocal action is a phenomenon which the Creator has impressed on this portion of His works, as the *fiat* of His will.

That this action *is* perfectly reciprocal, is proved by the resemblance of the new being or offspring—be it animal or vegetable—to *both* parents. The event is at present as inscrutable in its nature and essence, as it is interesting to the physiologist and philosopher as a subject of observation and new inquiry.

Why *this* seed of the Triticum Indicum, or Indian corn, on which pollen has fallen, should, if planted in soil and exposed to the genial influences of heat and moisture, become a noble and useful plant; and this other, to which, from its mode of growth and treatment, no pollen has been allowed to have access, shall, under similar circumstances and influences, undergo decay and decomposition, who can tell? Why *this* egg, which has been fertilized by pollen, should, under similar genial influences, become a bird, and eventually soar into the regions of the atmosphere; and why this other, unaffected by pollen, should pass into a state of putrefaction, who can declare? Who will attempt to explain why those "divinæ particulæ auræ," which exist in the form of pollen, can alone vivify these ova? Who can say *what* there is in these ova, and *what* there is in the appropriate pollen—for the *two* are *equally* essential—which develope growth, and form, and *life?*

Look at these ova and on these seeds. On *this* ovum and on *this* seed no pollen has ever been shed. They will, though placed in circumstances the most favorable for developement, only pass the more readily into decay. But this other ovum, this other seed, on which pollen, life-giving pollen, has shed itself, will, under similar circumstances, germinate and pass into life, the whole subsequent being being expressly imbued with the equally inscrutable properties of the pollen, and of the ovum or seed.

What is the condition of this pollenized, this fructified ovum or seed *before* active life begins? Is life in abeyance? or is it in actual existence only in its lowest and imperceptible form? Have eggs and seed a temperature of their own, above that of the medium in which they are placed? And what is the condition of this *offset* of an animal or animalcule, (as the planaria,) or of this plant? Both will continue to live independently of the original stem. Both may be multiplied and propagated by new and similar offsets. Both are, as I have stated, equally imbued with the properties, both of the original pollen and ovum. All this is mysterious, inscrutable in its essence, constituting one of the arcana of nature, which may long, may forever be hidden from us.

But the *laws* of life, and those of the material and inorganic world, may be detected, and their detection and investigation are amongst the most legitimate, interesting and important objects of philosophical inquiry. At present I beg only to state, that whilst pollen places the ovum or seed under *vital* influences, its absence allows them to become the prey of mere physical or chemical agencies alone.

The further essential and distinctive characteristic of organized beings, that in which they differ from the objects of the inorganic world, is—*membrane*. Through this membrane, a special function of transition takes place, constituting endosmosis and exosmosis, or imbibition and exudation.

If this membrane be injured, or broken down, the materials of organized beings are again immediately subtracted from the laws of organization, and delivered over to the ordinary principles of chemical action—decay, or eremacausis—from which that membrane had preserved them, whilst it placed them under the dominion or modification of vital influences. Examples of this fact are afforded by bruises of animal or vegetable tissues, which, if slight, are repaired by the vital powers; but if severe, lead to death or decay. How extraordinary are the changes which almost immediately take place in bruised flesh, or in a bruised orange or apple!

But I must hasten from these preliminary views, and pass on to the more express subject of this lecture. All living beings,

from the serpent to the eagle, possess, in common, peculiar *dynamic* properties; in all, these properties respond to appropriate external and internal *stimuli*. On the reciprocal play, action and re-action, of those forces and agents, life, with all its varied phenomena, in all its varied forms, essentially depends.

These dynamics and these stimuli bear a relative proportion to each other; this proportion is *inverse*; the higher the dynamic, the lower the stimuli, and *vice versa*. *Such is—the Law of Animal Life.*

In the animal kingdom, *two* forms of dynamics exist; the first has its seat in the nervous system, or, more definitely, in the spinal and ganglionic sub-systems; I venture to designate it by the term *neuro-dynamic*. The second has its seat in the muscular system; it may be designated *myo-dynamic*. The stimuli exist in greater numbers, for they consist in physical and chemical agents of the external world—such as air, food, water, heat, light, the galvanic influence, &c.

I must introduce the subject of the vital dynamics by showing those who are not familiar with physiology, an experiment full of the deepest interest; I place before you a frog, prepared for the purpose, and you will observe how the most elevated principles of philosophy may be illustrated by what you may deem the humblest objects of creation. The physiologist knows and feels that his science, elevated as it is, is included in the most insignificant insect that lives—the caterpillar or the butterfly.

The nervous system consists in *three* sub-systems; the first is that in which the brain, or cerebrum, is the centre, and sensation and volition are the special functions; I have removed this centre and these functions from this frog, by removing the head, and, with it, the very centre of the system, or sub-system, itself; the creature is thus entirely deprived of sensibility; the idea of suffering is excluded. It is also deprived of volition—all *spontaneous* movements are impossible.

Yet there *is* a source and power of movement remaining, for you observe the effect of irritation of the integument covering the toe or foot. This power resides in the spinal marrow, or spinal centre, and certain nerves proceeding *to* it and *from* it, termed therefore, eisodic and exodic. I have designated this power neuro-

dynamic; it was formerly termed the *vis nervosa*; its English appellation would be *nerve*-power.

The nerves which proceed *to* the centre of this spinal system, *arise* from the skin. I have removed them from the left foot, and you will observe that the same irritation which, applied to the right foot, induced contraction of the muscles, is inoperative when applied to this wounded limb; in effect, the *origin* of the eisodic nerve has been removed with the integument.

But I now irritate the spinal centre itself: you observe the convulsions produced.

Lastly, I irritate these, the lumbar nerves; they are exodic, and proceed to the muscles: again the limbs are violently agitated by movements.

These, then, are phenomena arising out of irritation of the nerves, eisodic and exodic, and the centre of the spinal system. They attest the neuro-dynamic power of those several nervous tissues.

But there is still a third sub-system of the nervous system; it is termed the ganglionic, and it is connected with all that is *interior*, or *within* us. I have here placed aside the viscera of the frog, and with them the ganglionic sub-system belonging to them—the heart, the stomach, the intestines, &c. If you were nearer, you would see the heart pulsate, and the stomach and intestines move by what is termed peristaltic action. These phenomena are effectible through the medium of the ganglionic portion of the nervous system, in which the neuro-dynamic must also reside.

But besides the power residing in the nervous tissues, there is, as above stated, another dynamic. Its seat is the *muscular* tissue; for which reason it may be designated the *myo-dynamic*. You observe the effect of a very slight galvanic influence passed along this muscle; the muscle is immediately vigorously contracted. This is the vis muscularis of physiologists, the *muscle*-power.

I must again hasten away from this explanation. I repeat that these vital dynamics, and the physical and chemical stimuli to which I have alluded, bear an inverse ratio to each other. This is the case both primarily and secondarily; the first, by creation; the second, by a natural operation and *effect;* for if stimulus be diminished, the dynamic becomes augmented: and if

the stimulus be augmented, the dynamic becomes exhausted, and, in some degree, proportionately reduced, as natural events, causes and effects. Thus the effect of hibernation, during which the stimuli of air, food, temperature, and nutrition, are reduced to their minimum, is to lead to augmented dynamic and excitability, and to what may very appropriately be designated, *vernation*, or the activity of spring; whilst the effect of the augmented stimulus in the summer months, that is of augmented air, food, temperature, and nutrition, is to exhaust or lessen the dynamic of nervous and muscular fibre, however they may augment general activity and power of mass, and prepare the way for the next winter's sleep.

By creation, and the operation of natural causes, then, the inverse ratio between dynamic and stimulus, in animated creation, is—the Law of Life.

The attempt to invert this law in either direction, and *equally* in either direction, is to destroy life. Unduly to augment the stimulus when the dynamic is high; or unduly to diminish the stimulus when the dynamic is low, is equally to interrupt the vital actions.

I will again illustrate my subject by a reference to the interesting case of hibernation:—If you take a bat from its winter quarters, from its state of hibernation, in which its respiration is at the minimum, and its dynamic at the maximum, and make it fly about, and so augment the vital stimulus of respiration, it infallibly *dies!* If, on the other hand, you take the same creature in its condition of summer activity and of high respiration and low dynamic, and deprive it of air, by immersion in water or in an irrespirable gas, it dies, too. Invert in either way the inverse ratio of dynamic and stimulus, and the result is fatal.

Low dynamic *requires* high stimulus; high dynamic, low stimulus. The higher the dynamic, the more capable is the animal of the further abstraction of stimulus, and *vice versa*. If, instead of taking a bat from its summer activity, you take it in its state of hibernation, and now immerse it in water for ten minutes, or even longer, it is altogether uninjured. The bat taken in its state of activity, and submerged in water, dies in two minutes and a half.

Thus the hibernating animal dies if its respiration be augmented whilst it can bear its suspension ; the same animal, in its state of vernation, or of activity, can bear its respiration to be augmented, but dies speedily if it be suspended !

I will illustrate this view by another order of facts :—the tadpole of the frog breathes in water, and feeds on water plants ; the same tadpole becomes a frog, breathes in atmospheric air, and feeds on insects ; it has become a higher breather—a higher feeder. In the former state, the dynamic, in the latter, the stimulus, is comparatively greater. The tadpole would die if taken out of its element, the water ; the young frog would drown if compelled to remain in it !

These facts are the results of innumerable experiments. I shall take occasion to revert to them hereafter.

Besides being *inverse*, to which there is no exception, the *ratio* between dynamic and stimulus may be higher or lower. It is in this manner that we are enabled to explain the *modes* of life. As life in general is a result of stimulus *into* dynamic, we should, without a provision of this kind, see all animals *equally* active or inactive. Either the reptile would not creep slowly, or the bird tribe would not soar into the atmosphere. But we observe, in fact, that when the stimulus is *dis*-proportionately low, the animal is of low activity ; and that when it is *dis*-proportionately high, the animal is in the enjoyment of an intense degree of activity.

Throughout animated nature, as I have already stated, in all the varied forms and modes of life, from the eagle to the serpent, the dynamic and the stimuli are in an inverse ratio to each other. Such, as I have observed and repeated, is the law of life. In the bird-tribes, the quantity of air and food imbibed is extreme, the degree of dynamic very low ; in the reptile tribes, the quantity of stimulus is low, and the degree of dynamic high. The following formulæ may serve to express this general fact :

Stimulus,	8	4	2	1
Dynamic,	1	2	4	8

The degree of activity, or of inactivity, in all these cases may be supposed to remain the same.

But to explain the greater activity of the bird, and the inactivity of the reptile, a modification of the formulæ is required, which may be thus expressed :

Stimulus	1	2+1	4+2	8+4
Dynamic	8	4	2	1

In this manner, whilst the inverse ratio between the stimulus and the dynamic, generally speaking, remains, that of the former may *augment* more rapidly as we pass into the more active forms of living beings than that of the latter *diminishes*; and thus the bird and the insect fly, whilst the reptile and caterpillar creep. With higher stimulus, the animal becomes more bird-like; with lower stimulus, it becomes more reptile.

With augmented air and food, other organs besides those of respiration and digestion become stimulated to greater action. There is especially a correlation between the rapidity of the action of the heart and of the acts of respiration arising in a peculiar and reciprocal manner out of the play of stimulus and of the neuro-dynamic which resides in the spinal and ganglionic sub-systems, and the myo-dynamic in the muscles which are respectively under their dominion, and out of the law which binds them together, which deserves to be distinctly described: The blood flowing through the lungs exhales carbonic acid; this is the internal excitor of inspiration acting on the fine branches of the pneumogastric nerves spread over the lining membrane of the lungs; the more rapid the circulation, the greater the quantity of carbonic acid exhaled, and consequently the more rapid the respiration. But this respiration brings the oxygen of the atmosphere into contact with the pneumonic blood in its turn, through the same pulmonary membrane; this oxygen is absorbed by the blood, passes into the circulation, and stimulates the heart to augmented action, and augments the rapidity of the circulation. This last has again, in its turn, a greater exhalation of carbonic acid in the lungs, again augmenting respiration; &c. In proportion to the augmented stimulus the dynamic is diminished.

The *changes* which take place in regard to the ratio of dynamic and stimulus are of *two* kinds: 1, *structural;* 2, *physiological.* The former, in metamorphosis, is usually, if not always, upwards, *to* a state of higher activity, to a state of higher stimulus with diminished dynamic; the latter takes place in both directions, being to one of higher stimulus in vernation, and to one of higher dynamic in hibernation. Activity on one hand, and repose, and,

especially, sleep, on the other, *induce* similar though less marked effects.

I think I have said enough to convince you, gentlemen, that there is, in this Law of Life, a most interesting and important fact, a vast generalization. This generalization embraces *three* great objects: 1, the scale of animated being; 2, metamorphosis and perhaps mere development; 3, physiological changes. I know of no law so general, so expansive.

I may now observe that it is of deep interest to trace the *criteria* of the ratio between dynamic and stimulus.

In the first place, galvanism is a test of neuro- and myo-dynamic, just as nerve and muscle, in the animal in which these dynamics are high, as the frog, become galvanoscopic or a test of galvanism.

In the second place, in the animal in which stimulus is high, the temperature and its measurer,—the thermometer,—become a test of its degree, and, of course, of the inverse condition of the dynamic.

Thirdly, the degree of activity or of inactivity denotes the relative condition of the two elements of the Law of Life.

Fourthly, it has already been noticed that, in proportion to the dynamic, and in the inverse proportion to the stimulus, the animal possesses the power of bearing the subtraction of stimulus, the privation of air and of food, and is, in more senses than one, endowed with *tenacity of life*. The length of time during which an animal can bear the privation of air, or breathe a given limited quantity of air, is proportionate to the dynamic.

In the fifth place, the quantity of respiration affords a measure of the stimulus. This is ascertained in various ways: 1, by the structure and extent of the *lungs;* 2, by the number of the respirations; 3, by the quantity of oxygen imbibed and of carbonic acid exhaled.

In proportion to the *surface* of the lungs on which the methæmatous or blood-changing channels are spread, in proportion therefore to the complexity of the structure of the lungs, is the quantity of respiration. The fish has a mere gill; the batrachian has a vesicular lung, with or without subdivisions or intersections, as we observe in the triton, or in the frog or toad, respectively; the lung of the serpent, the tortoise, the tribes of

the mammalia and of the birds, becomes more and more complex and extended; in the insect and in the bird, the respiration is extended over the system, not being limited to one organ; in the insect, indeed, each articulate segment is furnished with an analogue of the medulla oblongata, as a central nervous organ of the respiration. The dynamic exists in an inverse proportion.

In the sixth place, the quantity of food assimilated or respired is a stimulus in itself, and in its proportion to respiration becomes a measure and criterion of the degree of dynamic inversely. In speaking of the quantity of stimulus as represented by the food, we must bear in mind the quality as well as the quantity of that food, and its convertibility into calorifacient and nutrient principles. *Insect* food is perhaps of all kinds of food the most stimulant, whilst vegetable food is the least so. It must also be a question how much of the food is really made available, and how much is excreted unrespired, unassimilated.

Seventhly, we have in the circulation a criterion of the kind and character of life; slow and with few methæmatous vessels, in the animal of low stimulus and high dynamic, it becomes quicker with more crowded vessels as the stimulus is greater. The structure of the lung and the degree of rapidity of the movement of the blood globules, must be carefully noted: as the former becomes more complicated and the latter augmented, the quantity of stimulus is higher, and, I need scarcely say, the degree of dynamic lower.

There is, indeed, no subject so replete with interest as the circulatory apparatus—pneumonic and systemic—in themselves, in the different orders of animated being, and in reference to the law of life. The entire apparatus consists of—1, the minute arteries; 2, the minute veins; and, 3, the intermediate blood-channels, or, as I have proposed to denominate them—from the important fact that all the changes which take place in the blood take place in them—the methæmatous or blood-changing channels. These vessels are specifically distinct, a distinction on which I have insisted on another occasion.

I must now, Gentlemen, in the last place, bring before you certain *results* of that law of life which I have thus very inadequately sketched. In doing this, I shall be compelled to repeat

some of the preceding remarks; but I prefer to do this to the alternative of leaving my sketch incomplete.

The first remark I have to make in regard to the results of the Law of Life, relates to the temperature of animals of high dynamic and of low respiration, and consequently of low temperature. Such animals are said to be of *cold blood.* This expression is inaccurate. No animal is positively of cold blood. The species of lowest temperature is still of a temperature higher than that which would subsist absolutely without respiration, and its blood is only *low* in temperature, without being as cold as the surrounding medium.

Even amongst fishes some are high, others low, feeders and breathers, with a corresponding temperature; the trout can only live at the surface of a limpid stream, breathing highly oxygenated water, and feeding on the insects immediately on that surface; the carp, on the contrary, lives and breathes lowly, at the lowest part of stagnant pools. The trout is, comparatively, a fish of high stimulus—food and respiration—and temperature, and of low dynamic; the carp, of high dynamic and low stimulus. The trout dies almost immediately if taken out of its crystal element; the carp will live for days in wet moss, that is, out of its own element, abundantly supplied with moisture, or in a limited portion of water ill supplied with mixed atmospheric air.

As we rise in the scale of animated being, from the fish to the reptile, from this to the mammalia, and from these to birds, the respiration, and, with this, the temperature, also rises, the dynamic proportionately falling; the temperature of the fish and reptile is slightly above that of the medium in which they dwell respectively; that of the mammalia is about 98°, that of the bird tribes about 102°, Fahr.

The temperature accurately coincides with the quality and quantity of food, the quantity of respiration, and is, in effect, the developement of an internal stimulus from stimulant ingesta.

With temperature there is also probably the evolution of the galvanic agency.

The galvanic apparatus, the thermometer, the quantity of food, the quantity of oxygen, the power to bear the abstraction of these stimuli, or, in certain circumstances, their addition; all these are criteria of the place a given animal, in a given condition, ought to occupy in the zoological or physiological scale.

Growth, development, metamorphosis, nutrition, in ovo and extra ovum, are other results of the play of vital powers, dynamic and stimulus. With each of such changes in form, a change in kind of life, or a metabiosis occurs.

Of these, hints have been dispersed in the preceding remarks. If I have succeeded in giving you, Gentlemen, an adequate idea of them, and of the other topics involved in the development of the Law of Life, I shall feel much gratified. Pray accept my best thanks for your kind attention throughout this imperfect lecture.

Each part of my subject would afford scope for distinct discussion, and one object of my visit to the United States is to secure to myself both the leisure and the opportunity for further physiological inquiry in regard to it. In this object I know and feel that I shall be assisted by the liberal and generous people amongst whom it is my lot, for a time, to dwell, and by the noble and free institutions, the objects of which it may, as on the present occasion, be my proud privilege humbly to promote.

Of the Smithsonian Institute I can only most cordially say, may it prosper, and may it long be the means of the diffusion of knowledge, and of consequent good to mankind!

Experimental Researches applied to Physiology and Pathology.

By E. Brown-Séquard, M. D., of Paris.

(Continued.)

XXVIII.—INFLUENCE OF RED BLOOD ON MUSCLES AND NERVES DEPRIVED OF THEIR VITAL PROPERTIES.

James Phillips Kay* has found that blood, injected into limbs of dead animals, just after irritability has disappeared, is capable of regenerating this vital property. I have gone much farther, and have discovered that blood is able to regenerate the vital properties of nerves and muscles, even in limbs which have lost their irritability and have been rigid for several hours. I have obtained this result from the following experiments:

1st. On the body of a rabbit, in which cadaveric rigidity had already existed for 10, 20, and in one case, 33 minutes, I divided the aorta and the vena cava in the abdomen, immediately

* Treatise on Asphyxia. London, 1834

above the bifurcation of these vessels. By means of small tubes, a communication was established between their peripheric extremity and the central extremity of the corresponding vessels divided in a living rabbit. The blood of this living animal circulated immediately in the posterior limbs of the dead one. After about six, eight or ten minutes, rigidity disappeared, and, a few minutes afterwards, movements took place when I excited the muscles or the muscular nerves.

2d. I have obtained a like result from an experiment more easily made than the preceding, and which I have performed more frequently. I divided transversely the body of a living guinea-pig, or rabbit, into two halves, on a level with the lower border of the kidneys, leaving no communication between the two halves, except by the aorta and the vena cava. I then tied the aorta immediately below the origin of the renal arteries. The muscular irritability gradually diminished, and in a very variable length of time* it gave way to cadaveric rigidity. I waited until rigidity had been fully developed in all the muscles, and then the ligature was relaxed and the circulation re-established. Rigidity disappeared slowly, and the muscles and the motor nerves resumed their vital properties.

3d. In order to ascertain if voluntary movements and sensibility could be restored to limbs that had been in a state of cadaveric rigidity, I tied the aorta immediately behind the origin of the renal arteries, in several rabbits. Shortly afterwards, sensibility and the voluntary movements disappeared in the posterior limbs. I waited until muscular irritability had given way to what is called *cadaveric* rigidity; and when that peculiar rigidity had existed for at least twenty minutes, I relaxed th ligature. Then circulation took place, and, in consequence of it, sensibility and voluntary movements re-appeared.

From this experiment it results, that not only local life, but all the properties and actions of full life, can be restored in limbs that have been in the state called *rigor mortis, cadaveric or post-mortem rigidity.*

4th. On a man, 20 years old, who was guillotined on the

* Sometimes 30, 20, or even only 10 minutes in weak animals, and from 1 to 8 or 9 hours in strong animals.

18th of June, 1851, in Paris, I made an experiment similar to some of the preceding. The decapitation took place at 8 o'clock A. M. Ten hours afterwards, *i. e.* ten minutes after 6 o'clock P. M., the muscles of the hand, upon which I intended to experiment, exhibited some slight manifestations of irritability. At 7 and at 7½ o'clock P. M. I ascertained that they had lost their irritability. Shortly after they were in a state of cadaveric rigidity.

I began the injection of blood 10 minutes after 9 o'clock P. M.

As I wished to inject fresh human blood, and as I could not obtain any from the hospitals at such an hour, I was obliged to make use of my own. My friends, Drs. F. Bonnefin and Deslauriers, drew from one of the veins of my left arm half a pound of blood, which was immediately beaten and completely defibrinated and filtered through a cloth.

As, in opposition to the general opinion, I had found that it is not necessary, in transfusion, to make use of blood at a temperature not far from that of warm-blood animals, I left the blood employed in this experiment freely exposed to the atmosphere during all the time of the operation. The temperature of the air was 19° centigr. (66°·2 Fahr.) I regret not having taken the temperature of the blood when I began to inject it, but it was probably about the same as that of the atmosphere.

The injection was made into the radial artery, a little above the wrist. The whole quantity of the blood was injected in about 8 or 10 minutes. The arm operated on had been separated from the body, and the blood injected came out from all the divided arteries and veins.

Having saved nearly all the blood which flowed from these vessels, I injected it anew. The last injection was made 45 minutes after 9 o'clock P. M. Ten minutes afterwards I found that cadaveric rigidity had ceased in the hand, and that two muscles only, out of the nineteen existing in that part, had not resumed their irritability. Three muscles had become so very irritable that a slight mechanical excitation was followed by a contraction in the whole length of their fibres.

At half past one o'clock A. M.,—seventeen hours and a half after decapitation and four hours after the injection of blood,—there was still a slight irritability in the muscles of the hand.

In this experiment I found that half a pound of defibrinated human blood was sufficient to give irritability, for several hours, to seventeen of the muscles of a hand.*

5th. An experiment on another guillotined man gave me more interesting results. The decapitation had taken place at 8 o'clock A. M. on the 12th of July, 1851. At 5½ o'clock P. M., cadaveric rigidity existed in almost all the muscles of the arms and fore-arms. I separated them from the body, and at 6½ o'clock I ascertained that cadaveric rigidity was increased, and that only a few muscles were still slightly irritable. At 8 o'clock P. M. (12 hours after the decapitation) the muscles of the two arms were completely deprived of irritability, and in full rigidity, and the muscles of the forearms contracted only locally under the influence of a mechanical irritation, and not at all when excited by a powerful magneto-electric current. Two other examinations made, one at 9½ and the other at 10 o'clock, gave the same results.

At 10¼ o'clock two or three bundles of fibres of one of the muscles of the fore-arm were the only parts where a mechanical excitation produced a slight local contraction. All the other muscles were perfectly stiff and deprived of irritability.

Twenty-five minutes after 10 o'clock there was no appearance of irritability remaining in any muscle.

I then began the preparations for the injection of blood, with the assistance of Drs. Martin-Magron, F. Bonnefin, Crouzet, and Mr. Moyse.

We drew about a pound of blood from the carotid of a strong dog. The blood was beaten and defibrinated before coagulation could take place in it, and 10 minutes after 11 o'clock the injection was begun. It was made in the brachial artery of the left arm, in the middle of its length, where the arm had been amputated. As soon as the blood had been thrown in the artery, some reddish spots appeared in different parts of the skin of the fore-arm, of the hand, and more particularly of the wrist. These spots became larger and larger, and the skin had the appearance it has in rubeola. Soon after, the whole surface of the skin was of a violet reddish hue. In a few minutes this color disappeared,

* For a full account of the circumstances of this experiment, see my paper in the *Gaz. Medic. de Paris*, t. vi.—1851, p. 421.

and was replaced by the natural hue of the skin during life. The skin became elastic and soft, as in a living man, and we saw the bulbs of its hair becoming erected and presenting the appearance called *cutis anserina.* By increasing and diminishing alternately the impulsion given to the blood, we succeeded in producing the beatings of the pulse in the radial artery. The veins were distinct and full as during life.

A short time after, the fingers, which had been extremely stiff, relaxed, and rigidity disappeared also in the other parts of the limb.

Forty-five minutes after 11 o'clock P. M., irritability had returned in all the muscles of the limb operated on. The degree of irritability, more particularly in the muscles of the arm, (triceps, biceps and others) was very considerable, and much greater than I had seen it at the time the corpse was first examined (about five o'clock P. M.) Irritability was still present in almost all the muscles of this limb at 4 o'clock A. M., (20 hours after the decapitation,) when I was obliged, from extreme fatigue, to abandon further investigation.

The blood injected was at 23° centig. (73°.4 Fahr.) when I began the operation, and the atmosphere was at 19¼° centig. (66°.66 Fahr.)

In this experiment, about one pound of defibrinated dog's blood gave irritability for more than five hours to all the muscles of a limb, from the middle of the arm to the hand.

6th. Every one knows the singular fact, that Vibriones and other Infusoria, when desiccated, will live when they are put into water. It is also perfectly known that seeds, after many centuries, may grow when put in the earth. I have found something of the same kind in higher organisms; it is that muscles, in a certain condition, after having been separated from the body for many days, may recover their irritability.

Dr. Coze, of Strasbourg, has found that chloroform injected into the main artery of a limb produces instantly the strongest rigidity, and that if blood is allowed to circulate again in the limb, life appears again in it. I have gone farther, and found that if a limb, in which an injection of chloroform has been made, is separated from the body, it is able, under the influence of an injection of blood, to recover its muscular irritability 2, 3, 4, 5

and (in one case) 10 days after the rigidity was produced. I think Mr. Edouard Robin is right in admitting that chloroform prevents the chemical changes that take place in organic bodies after death, and, if it is so, we can understand why an injection of blood made so long after the limb has been separated from the body, may reproduce irritability. One day is not more than one hour, if, during it, there is no alteration produced in the muscles.

It appears, nevertheless, that chloroform does not entirely prevent the alterations of muscles, because, in my experiments, I have found that the longer the limbs had been separated from the body, the greater was the quantity of blood necessary to reproduce irritability.

7th. I lately made an experiment, with the view of ascertaining how long a limb, separated from the body of an animal, may be kept alive by means of injected blood. I succeeded in retaining local life in one of the limbs of a rabbit more than 41 hours. The animal was a very vigorous, full grown one. I killed it by hemorrhage, and, two hours afterwards, rigidity had begun in most of the muscles of the two posterior limbs, and only a few bundles of muscular fibres had still a slight irritability. A first injection of defibrinated blood was then pushed in the femoral artery of the right posterior limb. Fifteen minutes after the beginning of the injection, local life (*i. e.* irritability) was restored in the limb receiving blood, and cadaveric rigidity had disappeared.

The manner of testing this irritability was the same as that of Glisson, Gorter, and all the experimenters of the two last centuries,—I mean by mechanical excitation. I did not use galvanism, as it exhausts muscular irritability too much, as Autenrieth, Pfaff and many other observers have shown long ago. Being aware of this fact, I have always, in my preceding experiments, made use of galvanism for a very short time only.

Three hours after the death of the rabbit, irritability still existed in the right limb (the injected one,) while the left was perfectly rigid and had not the slightest irritability. Half an hour later, rigidity had begun again in the right limb; blood was injected anew, rigidity disappeared, and local life returned. From this moment until 11 o'clock, P. M., (death had occurred at 6 o'clock, A. M. of the same day,) blood was injected many

times. Rigidity did not return, and the vital property of the muscles was maintained. Of course the left limb, during that time, remained rigid, and had not the slightest irritability.

From 11 o'clock, P. M. until 6 o'clock, A. M. the succeeding day, an abundant injection of blood was made every twenty or twenty-five minutes. The irritability was not powerful, but it existed in all the muscles of the limb. There was no rigidity at all.

The injections were then made more frequently—once in each quarter of an hour—until three o'clock, P. M., at which time I was obliged to stop them for an hour and a half.

At half past four I found the limb rigid, and only a few bundles of muscular fibres still irritable. A very abundant injection was then practised, and rigidity soon disappeared, giving way to irritability. From this time to 11 P. M., a great many injections were made, and irritability was maintained. I was then obliged to give up the experiment. At that moment irritability was strong in all the muscles of the injected limb, except some parts of their pelvic extremities that had not received a sufficient quantity of blood.

The next morning that limb was in full and energetic rigidity. The other limb had already lost its rigidity, and had an evident smell of putrefaction. The third day after the death of the animal, rigidity was strong in the injected limb, while the other was in an advanced state of putrefaction.

If we compare these two limbs, we find, 1, That the injected one had a strong irritability at the end of forty-one hours after the death of the animal; 2, That its rigidity gave way to putrefaction only at the eightieth hour; 3, That it was in complete putrefaction only at the ninety-fourth hour. The other limb was in full rigidity at the fifth hour after the death of the animal; its rigidity gave way to putrefaction at the forty-eighth hour; and it was in complete putrefaction at the seventieth hour.

From all the experiments above related, it appears that life may be reproduced or maintained in muscles and nerves by mere injections of blood. I have found, also, that life may be reproduced by the same means in the spinal cord and in the brain. I will publish these facts in another article.

It is nearly indifferent in these experiments whether we use venous or arterial blood; but it is absolutely necessary to employ red blood, *i. e.* oxygenated blood.

I have tried, sometimes, arterial blood, rendered black by the substitution of nitrogen or hydrogen for a great part of its oxygen, and I have found that such blood was unable to reproduce the vital properties of nerves and muscles.

Oxygen is necessary, either because it prevents the blood-globules from being altered, or because it acts directly on muscles, as Gustavus Liebig has found it does on their external surface, when exposed to air. I believe it is necessary for both these reasons.

I cannot say how long after the beginning of cadaveric rigidity in a muscle, oxygenated blood can reproduce local life. In the second of the two decapitated men, on whom I experimented, rigidity had existed at least five hours before the injection was begun. I believe that the stronger the animal is, the more easy it is to reproduce local life in rigid limbs, by injection of blood. In limbs of weak rabbits, I have found it impossible, two hours after the beginning of cadaveric rigidity, to reproduce local life. In a very strong dog I have reproduced muscular irritability four hours after rigidity had been fully developed.

Ten, twelve, or fourteen hours after rigidity had taken place, in human limbs, I have tried in vain to re-establish local life.

I have ascertained that pure serum of blood, or milk, or albumen of eggs, are unable to produce any apparent change in rigid limbs.

The following conclusions are to be drawn from the facts related in this article:

1st. Red blood, *i. e.* richly oxygenated blood (arterial or venous) is able to revive irritability in muscles, four or five hours after these organs have lost this property.

2d. Red blood is able to revive the vital properties of nerves and nervous centres, when these properties have not been lost for more than about an hour.

3d. Muscular irritability can be maintained for more than 41 hours, by mere injections of blood, in limbs separated from the body of a rabbit.

4th. Muscular irritability may be re-established in limbs rendered rigid by chloroform for many days, even ten days.

XXIX.—CASES OF LOSS OF SENSIBILITY ON ONE SIDE OF THE BODY, AND LOSS OF VOLUNTARY MOVEMENTS ON THE OTHER SIDE.

It has been objected to me that if the transmission of sensitive impressions, in the spinal cord, takes place, as I have tried to prove in a former part of this sketch (Art. XIX,) so that those coming from the left side of the body, are mostly conveyed to the sensorium along the right side of the spinal cord,—*et vice versa*—physicians should have some times found in man the same thing that I have discovered in animals.

Many reasons have prevented physicians from making such a discovery: In the first place, an injury or a pathological alteration, limited to a lateral half of the spinal cord, is very rare. Besides, the idea that there is no crossing of fibres in the spinal cord, has been an obstacle to a thorough examination of many pathological cases, and it has been so in a case observed by Boyer.

There are but few cases on record in which there was a loss or a diminution of sensibility on one side, and of voluntary movements on the other. I will give here a short account of some cases of that kind, which are very interesting.

The first one I will relate has been observed by Boyer:

A drummer, of the National Guard of Paris, received a wound in the back of his neck. A sword had been thrown at him, and had penetrated the superior part of the right lateral half of the neck. An incomplete paralysis of movement took place in the right side of the body, and, some time after, it was accidentally discovered that sensibility was lost in many parts of the left side of the body. After twenty days the wound was cured, and the man went out of the hospital, still paralysed.

From what we know of that case, it appears that the sword had incompletely divided the right lateral half of the spinal cord. The paralysis of motion on the right side of the body was certainly produced by the division of a part of the anterior column, and, as the instrument had penetrated the right side of the back of the neck, it must have divided the parts between the anterior column of the spinal marrow and the external surface of the right side of the neck. These parts, besides the muscles and

bones, are the lateral and posterior columns and the gray matter of the right half of the spinal cord. So that in this case nearly the same injury and also the same morbid phenomena had existed as in the animals on which I have divided a lateral half of the spinal cord.

The following case is still more interesting. It has been recorded by Dr. R. Dundas, Surgeon of the Hospital of Bahia.

A mason fell on his back from an height of 20 feet. After having recovered his consciousness, he discovered that all the left side of his body, from the shoulder to the foot, was paralyzed as to motion, without the slightest alteration of sensibility, and that the right side in which the movements were free, was completely deprived of sensibility.

Three important facts, precisely like those I have discovered in animals after the transversal section of a lateral half of the spinal cord, existed in this case :

1st. A morbid exaltation of sensibility in the side where movement was lost.

2d. A diminution of temperature in the side where the paralysis of sensibility existed.

3d. An increase in temperature in the side where the paralysis of movement existed.*

When Dr. Dundas published this curious case, the patient was living and improving ; so we do not know what was the alteration existing in the spinal cord.

H. Ley, in a letter to Sir Charles Bell, relates the following case :†

Mrs. W., after a profuse hemorrhage, became paralytic. Upon one side of the body there was a loss of sensibility, without, however, any corresponding diminution of power in the muscles of volition. The breast, too, upon that side, partook of the insen-

* In a former part of this sketch (Art. xxii.) I have related facts proving that animal heat may be increased after injuries to the spinal cord. I have learned since, that Prof. D. Gilbert has observed a case of fracture of the spine, in which the temperature of the paralyzed parts was increased. Prof. Dunglison has also stated that the paralyzed side in hemiplegic patients may have an elevation of temperature.

†The nervous system of the human body. By Ch. Bell. 3d ed. London, 1844, p. 245.

sibility, although the secretion of milk was as copious as in the other. She could see the child sucking and swallowing, but she had no consciousness, from feeling, that the child was so occupied.

Upon the opposite side of the body there was defective power of motion, without, however, any diminution of sensibility. The arm was incapable of supporting the child; the hand was powerless in its grasp; and the leg was moved with difficulty, and with the ordinary rotatory movement of a paralytic patient; but the power of sensation was so far from being impaired that she constantly complained of an uncomfortable sense of heat, a painful tingling, and more than the usual degree of uneasiness from pressure, or other modes of slight mechanical violence.

She again proved pregnant. Her delivery was easy: but after about ten days she complained of numbness on both sides. Her articulation was indistinct; she became more and more insensible, and sank, completely comatose.

No positive disorganization of the brain could be detected. The ventricles, however, contained more than usual serum; and there were found thickening and increased vascularity of the membranes, with moderately firm adhesion in some parts; in others, an apparently gelatinous, transparent and colorless deposit interposed between them.

Unfortunately, no examination of the spinal cord was made.

In this case there was very likely, as in my experiments, an increase in the temperature of the side paralyzed of motion. The writer merely says that *the patient was constantly complaining of an uncomfortable sense of heat.* There was, as in my animals, an evident increase in sensibility on that side.

M. Monod* has related the case of a man who, after having felt a sudden pain in his back, became paralyzed in the motion of the right inferior limb. Sensibility was entire on this side, but on the left side, where the movements were entire, sensibility was entirely lost from the breast to the foot. There was at first no fever. The patient died 34 days after the beginning of this affection.

The brain and its membranes were normal. A hemorrhage

* Bulletin de la Société Anatomique, No. xviii. p. 349.

had taken place, and blood was found in the right side of the central gray matter, in the neighborhood of the anterior column in the dorsal and lumbar regions.

This case is assuredly a very remarkable one, and in accordance with my experiments.

The conclusion to be drawn from these four cases is, that in man as well as in animals, there appears to be a crossing of the sensitive nerve-fibres in the spinal cord.

XXX.—ON THE DIFFERENT DEGREES OF EXCITABILITY OF THE DIFFERENT PARTS OF THE SENSITIVE NERVE-FIBRES.

It is a well-known fact, that an excitation of the skin or of a mucous membrane, produces a greater pain or a greater reflex action than that of the nerve trunk, from which these parts receive their nerve-fibres. For instance, a slight excitation of the laryngeal mucous membrane produces coughing, while an excitation of the vagus nerve very rarely produces the same effect. Therefore, there is a notable difference between the peripheric extremity of a nerve-tube and its part contained in a nerve-trunk.

The existence of a peculiar organ in the skin (the *corpuscles of touch* of Wagner) has not much (if it has anything) to do with the different degrees of excitability of nerve-tubes in the skin and in the trunks of nerves. The corpuscles of touch do not exist in the mucous membranes, and if they exist in the skin of frogs, turtles, etc., it is in a very small number; and, nevertheless, the degree of excitability of nerve-fibres in these parts is much superior to that of the fibres of the nerve-trunks.

Some very striking differences exist in the degree of excitability of centripetal nerve-fibres in the five following different parts of their length.

1st. The part contained in the skin.

2d. The part of a nerve extending from the skin to the spinal cord.

3d. The posterior roots of the spinal nerves.

4th. The part of the posterior roots attached to the spinal cord.

5th. The part of the cutaneous nerve-fibres contained in the gray matter of the spinal cord.

The fibres existing in the gray matter of the spinal cord appear to be inexcitable, at least by our ordinary means of excitation. Of the four other parts, the less excitable is the nerve between the ganglion and the skin. The excitability of the posterior roots is less than that of the skin and that of their part attached to the spinal cord. Of these two last parts the skin is less excitable than the other.

I measured the excitability by the degree of pain or of reflex action. The differences are much more easily found for the reflex action than for the pain.

Is it because they have been connected with the cells of the central gray matter of the spinal cord, that the centripetal fibres, contained in that gray matter, are not excitable? If it is so, there is a difference between these cells and those of the ganglions on the posterior roots, because the connection of these fibres with the cells of these ganglions does not prevent their being excitable.*

From the facts above related I conclude that the same nerve-fibre, in different parts of its length, may have very different degrees of excitability.

(To be continued.)

Iodine as a preventive of Mammary Abscess. By H. C. Stewart, M. D., of Salisbury, Somerset Co., Pa.

This communication, I presume, will fall under the notice of no physician unacquainted with what is usually termed mammary abscess, both as regards the condition of the breast and the best known means of obviating that distressing condition, to which the "lying-in woman" is so often subjected.

Perhaps no organ of the body is capable of producing a

* Recently, Dr. Cl. Bernard has communicated to the *Société de Biologie*, of Paris, a fact which would be very important if it were exact. He says that some of the fibres of the posterior roots of the spinal nerve, in frogs, do not pass through the ganglion,—that they are the sensitive fibres, and that the ganglionic fibres are merely for reflex action. I have made, alone or with my friend Dr. Henry Lolliot, the minutest examination of the spinal ganglions, and I am satisfied that all the fibres of the posterior roots pass in the ganglion, and that Dr. Bernard has been mistaken.

greater amount of suffering to the patient, and vexation to the physician, than the female breast. Situated upon a prominent part of the body—delicately constructed—influencing and being influenced at times, by other organs, it is adapted to the performance of an important function, the disturbance of which must necessarily produce a disagreeable and dangerous result, often requiring the best efforts of the physician to counteract.

Seeing, then, that these things are so, we have been led to inquire, Is there no remedy? or must our patients, after having undergone the agony of parturition, still suffer on, simply because their breasts have not been properly and sufficiently relieved of milk as fast as secreted?

If mammary abscess cannot be *prevented*, it is not because *remedies* have not been *proposed* for it; for amongst all the "ills that flesh is heir to," there is none, perhaps, for which such a multitudinous variety of *cures* has been tried. This is probably the best evidence of the difficulty of preventing such an occurrence.

The first indication that suggests itself to the mind of the physician, is to remove the tension by withdrawing the milk. But this cannot always be done; for in how many cases do we find a complete obstruction of the ducts; others, again, where there are no nipples, consequently no outlet for the milk. Have we no remedy here, or must we let the gland inflame, and then bleed and apply leeches and "poultices to favor suppuration," and when the abscess forms, open it with a lancet, and run the risk of forming a milk fistula, then apply adhesive strips, and if all this fail—*let it alone?*

In the early part of my practice, I was called to attend a lady, the mother of five children, none of whom she had ever suckled, owing to an inversion of the nipples, and consequent obstruction of the ducts. So thorough was this obstruction, that the best efforts of the physicians, on former occasions, had totally failed to relieve the breasts of a particle of milk; consequently the woman had suffered on every occasion from mammary abscess.

In giving me a history of the treatment at different times, she said that at one time she came near losing both breasts; when

the physician, (dead at the time of this conversation,) as a last remedy, applied something which, from the description given me, I believed to be iodine. Knowing the efficacy of that article in all glandular affections, I resolved to try it as soon as the breasts showed any signs of inflammation. On the third day, finding them large, heavy and intensely painful, I made an application to the breasts of iodine ointment spread upon linen, which gave almost immediate relief. After a few applications, I found the breasts "perfectly flaccid, completely cool, and admitting of the freest palpation and handling, without the woman making any complaint." From the favorable result in the above case, I was induced to try it in two similar cases, with the same success, and so far as I know it has never failed in the hands of any of my medical friends to whom I have recommended it; but not a few there are who can bear testimony to its virtues.

With these few suggestions, I respectfully submit it to the profession, hoping that it may not disappoint their expectations.

Tetanic Symptoms from the use of Iodide of Potassium. By D. P. PHILLIPS, M. D., Passed Assistant Surgeon, U. S. N. (Communicated by PROF. DUNGLISON.)

A case of some singularity having occurred under my own observation, and thinking that it might not be devoid of interest to you, I have concluded briefly to give its history.

Whilst Acting Surgeon of the U. S. Ship Massachusetts, a fireman, named J. White, was admitted upon my sick list with rheumatism. I ordered the administration of iodide of potassium, grs. viii. ter in die, to be taken before meals in a spoonful of water. Soon after commencing with the remedy (probably the second day) he complained of some uneasiness and stiffness in the jaws; but supposing it to be some trivial affair, I paid but little attention to it. On the next day the difficulty had increased, and I directed frictions with some stimulating liniment; but when I saw him the day after, the jaws were immoveable. Upon careful inquiry, I ascertained that ever since he had been using the iodide he had experienced a burning and uneasy sensation in

the œsophagus and stomach. Upon learning this I discontinued the medicine, and ordered counter-irritation over the stomach. In a few days the tetanic symptoms entirely disappeared, and the iodide of potassium was renewed, but diluted in a tumbler half full of water, and given *after* each meal. The patient entirely recovered from rheumatism, and had no return of the trismus. I attributed the unusual symptoms entirely to the use of iodide of potassium in too concentrated a form.

Mortality of Philadelphia for January, February and March, 1853, *arranged from the Record kept at the Health Office.* By Wilson Jewell, M. D.

The total number of deaths from all causes for the first quarter of the present year, beginning Jan. 1st and ending April 2d, including a period of 92 days, or 13 weeks and one day, amounts to 2478, averaging 27 deaths per day.

By deducting the "Still Born," the deaths from "External Causes, Old Age, Debility and Unknown," we have left 2033 deaths from known diseases.

The excess of deaths in the sexes is on the side of the males, amounting to 138.

The male still-born children almost double in number those of the female sex.

Eight hundred and seventy-five, or 36 per cent. of the deaths from all causes, exclusive of Still-Born, were in children under five years of age. Of these, the diseases of the organs of Respiration, Convulsions and Croup, make up two fifths of the whole.

Nearly 20 per cent. of all the deaths, took place in individuals under 19 years of age.

The aggregate of deaths fall short of those for the same months in 1852 by 12¼ per cent. This difference is about equivalent to the decrease in the mortality from Small Pox, as presented in the two tables. The 1st quarter of 1852 showed 258 deaths from Small Pox; the present year, for the like period, gives only 29.

Class I. Among the deaths classified as Endemic or Zymotic,

there is a decrease of 20 per cent. from those for the same months and in the same class in 1852, while the deaths from Croup, Scarlet, Typhus and Typhoid Fevers have increased over 40 per cent. The discrepancy, however, may be reconciled by the great falling off in the deaths from Small Pox. Scarlet Fever provides 223 deaths in this class, in proportion, nearly, as one to two of all others under the same head. The disease was most fatal in February, and the period of life when the greatest mortality occurred was between 2 and 5 years.

Class II. Of the Sporadics, or diseases of Uncertain Seat, there were 315 deaths. Ninety-seven, or nearly one-third, are charged to that exceedingly indefinite cause of death, Debility; and of these 42, or nearly one-half, were within the first year of life.

Class III. Under the head of Nervous Diseases, we find Convulsions occupying a very prominent place in the scale. Out of 404 deaths, they are made to furnish 133! sixty-nine of these were under one year of age.

Class IV. The deaths from diseases of the Organs of Respiration amount to 596, exceeding those of any other class, and are as one to three and a half of the whole number. Compared with those of the same class and period for last year, there is a falling off of 20 per cent.

Consumption of the Lungs holds a very conspicuous position in this table, furnishing 344 deaths, only 14 less than for the same quarter of 1852, notwithstanding the extreme mildness of the season. This fact appears to sustain the opinion, that neither temperature nor seasons afford any great exemption from its uniform fatality. The deaths recorded from Consumption of the Lungs, occupy thirteen distinct periods of life, but observe no equality. The particular age during which it seems to have been more frequently fatal was between 20 and 30, when one-third of the whole number recorded occurred. This peculiarity corresponds with other statistics. Among females the deaths were 15 per cent. more than in males.

Pneumonia stands next highest, namely, 113. A large proportion of these—more than one-half—took place within the fifth year of life. Children would seem to be its victims in a

peculiar degree. Compared with those for '52 in the same quarter there is a falling off of 42 per cent.

Class VIII. The diseases of the Organs of Generation supply only 34 deaths. Of this number 32 were females, and 16, or one-half, are ascribed to Child Bed and Puerperal Fever. If we base the calculation upon 2800 births quarterly, it will give us one death in every 175 deliveries. During the same period in 1852 there were 27 deaths recorded from Puerperal Fever and one from Child Bed.

The table marked No. 3 gives a summary of the number of deaths during the quarter, at fifteen distinct periods of life. From this it appears that 470, or 18 per cent., took place within the first year of life, and 1036, or 42 per cent., were under five years. These calculations include the Still-Born. Beyond 70 years there were 141 deaths, or 6 per cent. of the whole number recorded. There were 12 deaths over 90, and one over 100 years of age.

TABLE No. I.

Deaths for the First Quarter of 1853, *classified.*

	January.	February.	March.	MALE.			FEMALE.			Total.
				J.	F.	M.	J.	F.	M.	
1. *Endemic and Contagious Diseases.*										
Zymotic or Epidemic . .	164	193	183	107	103	90	57	90	93	540
2. *Uncertain or general seat.* Sporadic diseases	89	101	125	41	56	68	48	45	57	315
3. Nervous System . . .	123	134	147	59	82	77	64	52	70	404
4. Organs of Respiration . . .	195	153	248	100	75	114	95	78	134	596
5. " Circulation . . .	17	14	25	7	12	12	10	2	13	56
6. Digestive Organs . . .	45	48	53	31	22	22	14	26	31	146
7. Urinary Organs . . .	2	5	7	1	3	6	1	2	1	14
8. Organs of Generation . .	8	13	13			2	8	13	11	34
9. " Locomotion . .	4	6	9	1	2	5	3	4	4	19
10. Integumentary System . .		1	5			3		1	2	6
11. Old Age	12	15	12	5	5	5	7	10	7	39
12. External Causes	29	30	38	18	14	22	11	6	16	87
Still Born	52	58	51	34	36	32	18	22	19	161
Unknown	18	15	28	9	9	18	9	6	10	61
	758	776	944	413	419	476	345	357	468	2478

TABLE No. II.

1. *Endemic and Contagious Diseases.—Zymotic or Epidemic.*

	Male.	Female.	Under 1 yr.	1 to 2.	2 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	100 to 110.	Total.
Cholera Infantum .	2	3	5															5
Croup . . .	59	50	15	27	52	15												109
Diarrhœa . . .	6	3	3		1	1				2				2				9
Dysentery . .	14	6	4	3	2	1		1	1	1	2	2	2	1				20
Erysipelas . .	13	17	12	4	1			2	2	3		3	2		1			30
Fever . . .	1				1													1
" Bilious . .	2	4		1		1		2	1						1			6
" Congestive .	2					2												2
" Remittent .	1	1				1								1				2
" Scarlet . .	124	99	20	42	112	40	5	1	2				1					223
" Typhus . .	35	15				1		5	15	12	10	4	2	1				50
" Typhoid . .	24	19		2	1	3	1	2	6	9	9	6	3	1				43
Hooping Cough . .	1	2	2	1														3
Measles . . .	4	2		4	2													6
Small Pox. . .	11	18	11	5	5	3	1	2		2								29
Influenza . . .	1	1								1			1					2
	300	240	72	89	177	68	7	15	27	30	21	15	11	6	2			540

2. *Uncertain or General Seat.—Sporadic Diseases.*

	Male.	Female.	Under 1 yr.	1 to 2.	2 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	100 to 110.	Total.
Abscess . . .	2					1	1											2
" Neck . .	2		1						1									2
" Throat . .		1			1													1
Angina . . .	2	1			2					1								3
Cancer . . .	5	3								2	1	1	4					8
" Breast . .		2											1	1				2
Cyanosis . . .	1	1	1		1													2
Debility . . .	42	55	42	2		1		3	2	6	7	4	14	12	1	3		97
Disease of Throat .	2		1		1													2
Dropsy . . .	27	24	1	1	10	6	1	2	5	2	2	5	11	4	1			51
Enlarg't of Parotid Glands	1									1								1
Hectic Fever . .	3	1		1					1	1		1						4
Hemorrhage . .	3	2	1				1		1	2								5
" Umbilicus	1	1	2															2
nanition . . .	10	4	10	1						1		1	1					14
nflammation . .	1	3	1	1					1						1			4
" Throat .	1	2	1		1					1								3
" Parotid Glands		3	2						1									3
Malformation . .	8	1	9															9
Marasmus . . .	34	26	39	9	5		1	1		1		1	2	1				60
Mortification . .	1													1				1
" of Neck .	1											1						1
Scrofula . . .	8	11	4	4	4	1	3	1	1		1							19
Scirrhus . . .	2								1						1			2
Tabes Mesenterica .	4	5	4	1	2		1		1									9
Tumors . . .		1								1								1
" of Abdomen		1											1					1
Ulceration . . .		1							1									1
" of Throat .	4	1			2	1			1			1						5
	165	150	119	20	29	10	8	7	17	19	11	15	34	19	3	4		315

3. *Of the Nervous System.*

	Male.	Female.	Under 1 yr.	1 to 2.	2 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	100 to 110.	Total.
Apoplexy	12	18	2		1				3	3	3	7	4	3	4			30
Concussion of Brain		1							1									1
Congestion "	16	20	9	5	8	3			2	3	5			1				36
Compression "	1	1								1			1					2
Coma	1										1							1
Convulsions	76	57	69	23	24	5		4	3	3		1	1					133
" Puerperal		1							1									1
Cramp	1	1	1		1													2
Disease of Brain	9	12	9	3	3	2	1		1	1				1				21
Dropsy "	32	19	24	16	9	1		1										51
Effusion "	18	18	5	8	8	3		2	2	3	1	1	2	1				36
Epilepsy		2			1				1									2
Inflammation of Brain	28	18	11	9	12	6	1		4	1	2							46
Mania	1									1								1
" a potu	9	5							3	5	3	2		1				14
Palsy	9	8	1			1			1	3	3	1	1	1	5			17
Softening of Brain	3	3	1						3			2						6
Tetanus	2	2	2			1	1											4
	218	186	134	61	67	22	3	7	25	24	18	14	9	8	9			404

4. *Organs of Respiration.*

	Male.	Female.	Under 1 yr.	1 to 2.	2 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	100 to 110.	Total.
Abscess of Lungs	2	1	1									1		1				3
" Thorax	1									1								1
Asthma	2	2										1	1	2				4
Congestion of Lungs	6	11	6	1	2	1	1				1	1	1	2	1			17
Consumption "	158	186	3	6	6	8	4	27	116	76	49	29	12	6	2			344
Disease of Lungs	3	2	2					1		1			1					5
" Chest	1		1															1
Dropsy of Chest	9	3			2	1			2	2		3	2					12
Effusion "		3				1			1					1				3
Hemorrhage of Lungs	3	2							3			2						5
Inflammation of Bronchiæ	28	39	27	9	13	5	1	1	2	2		1	3	1	2			67
" Chest	3	1	2		2													4
" Larynx	4	5	1	1	3	1			1		1		1					9
" Lungs	63	50	33	17	14	10		4	5	7	4	5	4	8	1	1		113
" Pleura	3								1			1	1					3
" Tonsils	1	1		1	1													2
Tuberculosis	2	1			1					1				1				3
	289	307	76	35	44	27	6	33	131	90	55	44	26	22	6	1		596

5. *Organs of Circulation.*

	Male.	Female.	Under 1 yr.	1 to 2.	2 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	100 to 110.	Total.
Anæmia . . .	3	2					1		1		1			2				5
Aneurism Carotid .	1		1															1
Congestion of Heart .		1													1			1
Disease of Heart . .	17	13	3		2	1		1	2	1	7	4	8	1				30
Dropsy " . .	1	3		1	1		1		1									4
Enlargement of Heart .	3	2				1	2				1			1				5
Inflammation " .	3	3		1			1		1	1		2						6
" Vein .		1				1												1
Malformation of Heart .	1			1														1
Ossification " .	1												1					1
Syncope . . .	1											1						1
	31	25	4	3	3	3	5	1	5	2	9	7	9	4	1			56

6. *Digestive Organs.*

	Male.	Female.	Under 1 yr.	1 to 2.	2 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	100 to 110.	Total.
Abscess Abdominal .		1					1											1
Aphthæ . . .		1	1															1
Cancer of Bowels .	1									1								1
" of Stomach .	1	1									1			1				2
Cirrhosis of Liver .	2									1	1							2
Colic	1		1															1
Congestion of Liver .	1		1															1
Consumption of Bowels	2	1	1							1		1						3
Cramp of Stomach .	1									1								1
Disease of Bowels .	1	2	1		1						1							3
" Liver . .	4	2	1		1					1	2		1					6
" Stomach .		1									1							1
Dyspepsia . . .	1													1				1
Dropsy Abdominal .	1	3								2	1	1						4
Gangrene of Bowels .		1								1								1
Hemorrhage of Bowels.	1	2								1	1		1					3
" Stomach		2	1							1								2
Hernia . . .		1											1					1
Ileus . . .	1									1								1
Inflammation of Bowels	3	4	2	1	3				1									7
" Stom'h & Bow'ls	25	27	9	4	5	5	2	2	8	7	2	3	5					52
" Liver . .	2	1								1		2						3
" Peritoneum .	9	12	2			1			6	7	1	2		1	1			21
Intussusception . .	1	1	2															2
Jaundice . . .	5	1	1						3			1		1				6
Obstruction of Bowels .	1		1															1
Perforation of Bowels .	2					1						1						2
Scirrhus " .	1											1						1
" of Stomach .	2										1	1						2
Strangulation of Bowels	1	1												2				
Stricture " .	1	2	1			1						1						3
Teething . . .	3	2	1	3		1												5
Tumour of Abdomen .		1										1						1
Ulceration of Stomach .		1								1								1
Tympanites . .	1							1										1
	75	71	26	8	10	9	3	3	18	27	12	15	8	6	1			146

7. *The Urinary Organs.*

	Male.	Female.	Under 1 yr.	1 to 2.	2 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	100 to 110.	Total.
Albuminuria . .		1						1										1
Diabetes . .	2	1						1			2							3
Disease of Bladder .	1													1				1
" Kidneys .	3	1				1	1			1			1					4
Inflam. of Bladder .	1	1									1		1					2
" of Kidneys .	2		1									1						2
Retention of Urine .	1										1							1
	10	4	1			1	1	2		1	4	1	2	1				14

8. *Organs of Generation.*

	Male.	Female.	Under 1 yr.	1 to 2.	2 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	100 to 110.	Total.
Child Bed . . .		4							2	2								4
Chlorosis . . .		1							1									1
Disease of Uterus .		1													1			1
Enlargemt. Prostate Gland	2											1	1					2
Hemorrhage from Uterus		4							1	1	2							4
Inflammation "		4						1	1	2								4
Ovarian Dropsy .		1									1							1
Phlegmasia Dolens .		1								1								1
Puerperal Fever . .		12							5	6	1							12
" Mania .		2						1		1								2
Rupture of Uterus .		1								1								1
Tumour " . .		1									1							1
	2	32						2	10	14	5	1	1		1			34

9. *Organs of Locomotion.*

	Male.	Female.	Under 1 yr.	1 to 2.	2 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	100 to 110.	Total.
Abscess of Spine .		1				1												1
Caries . . .	1								1									1
Caries of Spine . .		1								1								1
Disease " . .	2	2		1	1				1		1							4
" of Hip . .		1						1										1
Inflammation of Spine .		1													1			1
Necrosis . . .		1										1						1
Rheumatism . .	5	3				1	1			2	1	2		1				8
Spinal Irritation . .		1							1									1
	8	11		1	1	2	1	1	3	3	2	3		1	1			19

10. *The Integumentary System.*

	Male.	Female.	Under 1 yr.	1 to 2.	2 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	100 to 110.	Total.
Fistula . . .		1								1								1
Ichthyosis . . .	1			1														1
Purpura Hemorrhagica	2	2	1					1						1	1			4
	3	3	1	1				1		1				1	1			6

11. *Old Age.*

Old Age . . .	15	24										1	1	13	16	7	1	39

12. *From External Causes.*

	Male.	Female.	Under 1 yr.	1 to 2.	2 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.	80 to 90.	90 to 100.	100 to 110.	Total.
Asphyxia . . .	10	6	15	1														16
Burns . . .	4	5	1	3	4				1									9
Casualties . . .	15	14	6	1		3	1	1	4	8			4	1				29
Drowned . . .	7						1			4	1		1					7
Fracture of Leg . .	3								1	1	1							3
" Skull .	1	1				1						1						2
Intemperance . .	5	2							3	1	1	1	1					7
Poison . . .	1	3							1	1	2							4
Suicide . . .	2	1							1	1		1						3
Suffocation . . .	6	1	2							5								7
	54	33	24	5	4	4	2	1	11	21	5	3	6	1				87
Still Born . . .	102	59	161															161
Unknown . . .	36	25	13	2	3	1	1	1	7	8	7	8	5	4	1			61

TABLE NO. 3.

Deaths for the First quarter of 1853, *at fifteen distinct periods of life.*

Under 1 year, ...	470
1 to 2	228
2 to 5	338
5 to 10	147
10 to 15	37
15 to 20	74
20 to 30	254
30 to 40	240
40 to 50	149
50 to 60	127
60 to 70	112
70 to 80	86
80 to 90	42
90 to 100	12
100 to 110	1
	2317
Still Born	161
Total,	2478

Included in the above Tables, were 201 from the Blockley Almshouse, 172 people of color, and 26 from the country; as follows:

	Jan.	Feb.	March,	Total.
Almshouse, . .	73	55	73	201
Blacks, . . .	43	56	73	172
Country, . .	8	7	11	26
	124	181	157	399

BIBLIOGRAPHICAL NOTICES.

Letters on Syphilis. By PH. RICORD, Chirurgien de l'Hôpital du Midi, &c., &c. With an Introduction by Amédée Latour Translated by W. P. LATTIMORE, M. D. Philadelphia: A. Hart, 1852. pp. 270.

These LETTERS appeared originally in the *Union Médicale* of Paris, during the years 1850, 1851. They have found their way, through various channels, to the English reader, and have, since the completion of the series in the Paris Journal, been collected and translated by Dr. Lattimore. They present a resumé of M. Ricord's peculiar views on the subject of syphilis, and are more particularly occupied with the defence and illustration of those "new doctrines" which, he complains, have failed, in the twenty years of his teachings and writings, to penetrate the minds of all his contemporaries. The Letters, however, despite the popularity with which they have been received, will, we think, fail to silence the dissenters from some of M. Ricord's dogmata. He has, indeed, repeated his old views in a very lively and attractive form; but we doubt whether the style and tone of the Letters will add anything to his reputation or give new force to his opinions.

M. Ricord's researches have certainly identified his name with the subject of syphilis. His experiments upon inoculation, his admirable scheme of syphilitic therapeutics, and his application of the speculum to the diagnosis of venereal ulcers, are among the most valuable contributions to modern medicine. But M. Ricord is a man of one idea—and that idea is *inoculation.* He

has found it to be a *positive* test of the specific character of the chancrous virus, and he attempts to pervert it into a *negative* test of the non-specific nature of gonorrhœa or, as he denominates it, blennorrhagia. The latter is scarcely less a point with him than the former; and, in fact, more than one-third of the Letters are devoted to it. It is not our purpose to follow M. Ricord's argument on this question. Its weakness strikes us as apparent in the postulate, upon which his facts are brought to bear. "If blenorrhagia," he assumes, "recognizes a specific cause, the muco-pus which it secretes will, undoubtedly, when inoculated, produce phenomena similar to those produced by the inoculation of chancrous pus." (p. 44.) That is, it is enough for M. Ricord to establish that inoculation with the matter of blennorrhagia is not followed by the phenomena which result from inoculation with chancrous pus, to warrant him in inferring the non-specific character of the former secretion!

It has not been our good fortune to read the Letters in the original. The translation is, we dare say, faithful and accurate, but it is evidently the work of an unpractised pen.

Proceedings of the Medical Association of the State of Alabama, at its Sixth Annual Meeting, held December, 1852. pp. 168.

We have already had occasion to notice the spirit and zeal evinced in the annual Proceedings of the Alabama State Medical Association. The volume just issued maintains the high rank which the profession of Alabama had previously assumed among our State organizations.

MEDICAL NEWS.

Delegates to the State Medical Society.—At a meeting of the Philadelphia County Medical Society, held April 20th, 1853, the following were elected delegates to the Pennsylvania State Medical Society: Wm. Ashmead, John B. Biddle, Henry Bond, Thomas F. Betton, J. R. Bryan, Chas. F. Bibighaus, B. H. Coates, Jos. Carson, D. Francis Condie, Wm. Darrach, G. Emerson, Jas. V. Emlin, Geo. Fox, P. B. Goddard, David Gilbert, Ed. Hallowell, S. L. Hollingsworth,

Isaac Hays, N. L. Hatfield, Samuel Jackson, W. Jewell, E. Janvier, A. L. Kennedy, W. H. Klapp, W. L. Knight, John P. Lamb, R. J. Levis, Wm. Mayburry, John K. Mitchell, Geo. W. Norris, A. Naudain, Hen. S. Patterson, L. Rodman, N. C. Reid, M. B. Smith, A. E. Stocker, L. Turnbull, F. West, J. Warrington, Thomas S. Yardley.

THE PHILADELPHIA DELEGATION TO THE NATIONAL MEDICAL ASSOCIATION.—The various bodies entitled to representation in the American Medical Association, have, so far as we have learned, selected the following delegates:

College of Physicians.—I. Hays, G. Fox, H. Bond, W. S. W. Ruschenberger, G. Emerson, J. R. Paul, C. Evans, W. Ashmead, J. Bell, E. Hallowell, A. Stillé, J. Carson, R. La Roche, E. Hartshorne, R. Bridges.

Philadelphia County Medical Society.—W. Ashmead, T. F. Betton, C. F. Bibighaus, D. F. Condie, B. H. Coates, J. Carson, G. Fox, S. Jackson, W. Jewell, J. F. Lamb, E. F. Leake, C. D. Meigs, W. Mayburry, G. W. Norris, H. S. Patterson, W. B. Page, L. Rodman, J. M. Thatcher, F. West, T. H. Yardley.

Northern Medical Association.—L. Curtis, B. S. Janney, N. L. Hatfield, J. F. Lamb, R. J. Levis, I. Remington

University of Pennsylvania.—S. Jackson, R. E. Rogers.

Jefferson Medical College.—J. K. Mitchell, J. Pancoast.

Pennsylvania Medical College.—J. M. Allen, J. J. Reese.

Medical Institute of Philadelphia.—J. B. Biddle.

Philadelphia Medical Association.—Wm. V. Keating.

Pennsylvania Hospital.—

St. Joseph's Hospital.—H. H. Smith.

Hospital of P. E. Church.—F. G. Smith.

DR. MARSHALL HALL.—We have great pleasure in presenting to our readers, in the present number, the Lecture delivered by Dr. Marshall Hall before the Smithsonian Institute. Dr. Hall's visit to the United States will, we trust, afford frequent opportunities to the profession of becoming personally acquainted with one whose name and works have been so long and so favorably known to them.

UNIVERSITY OF VIRGINIA.—Dr. Wm. B. Rogers has resigned the chair of Natural Philosophy, and Dr. J. Lawrence Smith that of Materia Medica and Chemistry in this Institution.

The Queen has conferred the honor of a baronetcy upon Dr. Henry Holland, one of the physicians-extraordinary to her Majesty.

TRIBUTE TO DR. BROWN-SÉQUARD.—At a meeting of the members of the class attending Dr. Brown-Séquard's second course of lectures in Philadelphia, held at the Pennsylvania College, Ninth street, below Locust, on Tuesday, April 26th, 1853, the following preamble and resolutions were presented by Dr. Edward Hartshorne, and unanimously adopted:

Whereas, The second of the two courses of lectures delivered by Dr. Brown-Séquard in this city, has just closed; and,

Whereas, The members of the second class, most of whom were also members of the first, are unwilling to part with him, without expressing in some way their appreciation of his most interesting and instructive demonstrations, and of his many new views in biology, and the application of these to the practice of medicine and surgery, therefore—

Resolved, That we are under the greatest obligation to the learned and able lecturer, for his admirable series of experiments, so happily explained and illustrated, not only on account of the valuable instruction he has thus conveyed to us, but on account of the powerful impulse to the more efficient practical study of biological science, which his precept and example have thus afforded us.

Resolved, That we regard his visit to this country, and the delivery of the various brilliant and successful courses on his favorite subject, in the cities of Boston, New York and Philadelphia, as likely to mark a new era in the progress of biological research in the United States.

Resolved, That we take leave of Dr. Brown-Séquard, as our teacher, with great regret, not only on account of the many original views which he has presented to us, as the result of his own investigations, and the many useful applications of these views to the improvement of the practice of medicine and surgery, but on account of his attractive qualities as an amiable and honorable man. And finally,

Resolved, That in view of his contemplated return to his old home, and the field of his early triumphs, we cannot do better than to wish him the same distinguished success that attended him there, increased opportunity of further discovery, and a more lasting prosperity in all the relations of life.

On motion, the Chairman and Secretary were appointed a committee to convey a copy of the above Resolutions to Dr. Brown-Séquard, on behalf of the class, and to procure their publication in the Medical News and the Medical Examiner.

(Signed) FRANCIS G. SMITH, M.D., *Chairman.*

J. CHESTON MORRIS, *Secretary.*

Glasgow Medical Journal.—The first number of a new and very able Quarterly Journal appeared on the 1st of April last, at Glasgow, in Scotland.

Cholera.—A recent letter states that there were 201 cases of cholera in St. Petersburgh, and that at the date of the letter there were thirty-two new cases, ten cures, and twelve deaths. This disease is disappearing at Breslau through (as the medical officers state) the low temperature of the atmosphere.—*Lond. Lancet, April 9th.*

Appointment.—M. Dubois has been appointed accoucheur to the Empress of the French.

Typhus Fever in Paris.—This frightful disease, according to the latest intelligence, is raging in Paris and its vicinity, and more especially in the military hospitals. Messrs. Begin and Levy have been ordered, as the medical inspectors, to make an official report of its origin and progress.

Academie de Medecine.—The Académie de Médecine yesterday elected as foreign members MM. Buffalini, of Florence, Mott, of New York, Warren, of Boston, Riberi, of Turin, Vieminckz, of Brussels, Retzius, of Stockholm, and Simpson, of Edinburgh.—*Galignani's Messenger, 12th March*, 1853.

Diseases Among the Bedouin Arabs.—Diseases are rare among them; and the epidemics, which rage in the cities, seldom reach their tents. The cholera, which has of late visited Mosul and Bagdad with fearful severity, has not yet struck the Bedouins; and they have frequently escaped the plague, when the settlements on the borders of the Desert have been nearly destroyed by it. The small-pox, however, occasionally makes great ravages among them, vaccination being still unknown to the Shammar; and intermittent fever prevails in the autumn, particularly when the tribes encamp near the marshes in Southern Mesopotamia. Rheumatism is not uncommon, and is treated, like most local complaints, with the actual cautery, a red-hot iron being applied to the part affected. Another cure for rheumatism consists in killing a sheep, and placing the patient in the hot reeking skin. Ophthalmia is common in the Desert, as well as in other parts of the East, and may be attributed as much to dirt and neglect as to any other cause.

The Bedouins are acquainted with but few medicines. The Desert yields some valuable simples, which are, however, rarely used. Dr.

Sandwith, hearing from Suttum that the Arabs had no opiates, asked what they did with one who could not sleep. "Do!" answered the Sheikh, "why, we make use of him, and set him to watch the camels." If a Bedouin be ill, or have received a wound, he sometimes comes to the nearest town, to consult the barbers, who are not unskilful surgeons. Hadjir, one of the great chiefs of the Shammar, having been struck with a musket ball, which lodged beneath the shoulder blade, visited the Pasha of Mosul to obtain the aid of the European surgeons attached to the Turkish troops. They declared an operation to be impossible, and refused to undertake it. The Sheikh applied to a barber who, in his shop in the open bazaar, cut quietly down to the ball, and taking it out, brought it to the Pasha in a plate, to claim a reward for his skill. It is true that the European surgeons in the service of the Porte are not very eminent in their profession. The Bedouins set broken limbs by means of rude splints.

The women suffer little in labor, which often takes place during a march, or when they are far from their encampment, watering the flocks or collecting fuel. They allow the children to remain at the breast until they are nearly two or even three years old, and, consequently, have rarely many offspring.—*Dublin Med. Press*, from *Discoveries in Nineveh by A. H. Layard, M. P., in Association Medical Journal.*

Death of M. Orfila—M. Orfila was but a short time ago snatched by the hand of death from the midst of friends and admirers, at the age of sixty-six years. This eminent man was so highly esteemed among his countrymen, and enjoyed such a world-wide reputation, that we gladly devote some of our space to sketch the brilliant career of so distinguished a member of our profession.

The deceased was born at Mahon, in the island of Minorca, on the 24th of April, 1787, and could, as well expressed by M. de Salvandy, from the rocks of his country contemplate both empires, and one day choose between the two lands. He possessed within himself the genius peculiar to each soil—the fertile, bold and searching activity of the one, the firmness, patience, and enduring perseverance of the other. Orfila's mind was first engaged upon the study of mathematics, as he was intended for a maritime life, at a time when the French and Spanish fleets were co-operating in the East. He actually served a short time, but soon relinquished the sea, and from the pursuit of mathematics turned to the cultivation of the natural sciences. For this purpose he repaired to the University of Valencia in the year 1804.

Physics and chemistry were at that period at a very low ebb in Spain; and Orfila, not satisfied with hearing his professors stating that air and water were two elements, seized upon the works of Lavoisier, Berthollet,

Fourcroy and others, and rose to the level of the discoveries of the day. But the University of Valencia was just then being threatened with abolition, on the plea of insufficient teaching; the professors provoked an inquiry, and put forward their pupils. Orfila greatly distinguished himself in the examinations, and so complete was his success, that the junta of Barcelona sent him to Paris at their own cost, to study chemistry, and the application of that science to the arts.

He arrived in Paris in 1807, and soon took a great liking to a country which, for the subsequent forty-six years, became his adopted land. The war which soon broke out between France and Spain deprived him of his allowance from Barcelona, but he was temporarily supported by a member of his family. It should here be mentioned that many years after this period, Orfila offered the junta his services, from gratitude at the patronage they had formerly granted him; but that body was in too disorganized a state to accept the honest man's disinterested proposals. Nor would his return to Spain have been a small sacrifice; for Vauquelin had welcomed him in his laboratory, and Fourcroy had entrusted to him the task of giving a few lectures on Organic Chemistry.

Orfila now obtained the degree of Doctor of Medicine, and began to lecture privately on Chemistry, Forensic Medicine, and even Anatomy, (a kind of authorized grinding,) and in this first and small laboratory he laid the foundation of the new science of toxicology. We say *new*, and advisedly; for the books published before Orfila's time mention none of those delicate tests introduced by the great chemist; it is true that even then certain poisons could be detected when dissolved in, or mixed with, water; but when these poisons were added to wine, milk, bile, &c., they were beyond the skill of the chemists of the day. Orfila's researches rendered investigations of this kind, and many others of equal importance, perfectly easy.

Orfila was soon appointed corresponding member of the Institute, (a generic name given to the four academies taken collectively,) and in 1819 he was appointed Professor of Forensic Medicine at the Faculty of Medicine, especially by the influence of the celebrated Hallé, who, though very ill, had himself carried to the medical school to vote for M. Orfila.

It was at first supposed that lectures on Forensic Medicine at the Faculty would attract but few hearers; but Orfila's happy mode of teaching, and of captivating the attention of the pupils, rendered the subject peculiarly attractive. His language was lucid, without being too much studied; and he treated the most difficult questions with so much method and precision, that the mind readily followed him. He was especially fond of conveying knowledge by actual experiment, and gave his explanation with a clear and penetrating tone of voice, in well chosen periods, and without too much fire or any hesitation. He loved to teach and guide the pupils, and thus drew around himself numerous and attentive hearers during the four years he lectured on forensic medicine, and the twenty-nine which he devoted to medical chemistry. This success is the more flattering, as pupils are not *bound* to attend the lec-

tures of any professor, and that the latter have a fixed salary, independent of the number of students who may attend them.

The fame of Orfila was now daily spreading, and his works and teaching on toxicology, forensic medicine, and chemistry testify to his immense labors; but he seemed to direct his whole energy to the detection of poisons. He looked upon the science of toxicology as composed of two principal divisions—one comprising the symptoms of poisoning, the consequent lesion of texture, and the medical treatment; the other, more exclusively chemical, embracing the detection of the poison either with a view of the discovery of an antidote, or for guiding the verdict of a jury. Both these branches were so highly cultivated by Orfila, that he became the oracle in the courts of law, and the dread of those who contemplated the treacherous administration of deadly substances.

In 1820, the Academy of Medicine, as now constituted, was founded by Louis XVIII., and the original members were seventy in number. Orfila was one of them, and, strange to say, the youngest of all. He distinguished himself for the next thirty-three years as a fluent and able speaker, always defended the Academy in the contests which that learned body had to sustain, and, when chairman, acted with great tact and ability. Shortly before Orfila's death, only five of the original seventy members were left, and it was remarked that Orfila was again the youngest amongst them.

The revolution of 1830, which carried Louis Philippe to the throne, became, for Orfila, the beginning of a series of prosperous days, in which wealth, honors, and the most envied appointments were showered upon him. But it may be said to his praise, that he rendered the greatest services, both to the state and to learning, in the several responsible and eminent posts which he successively occupied.

As Dean of the Faculty of Medicine, (in which dignity he succeeded the celebrated Antoine Dubois, father of the present accoucheur, Paul Dubois,) he used his best efforts, for a period of eighteen years, to introduce improvements of great importance in the medical school. Without neglecting toxicology or his professional duties, he began to root up abuses, and to make regulations which to this day call for the gratitude of the students. Lectures, by his endeavors, were now given with regularity; the pupils were subjected to a wholesome discipline; the miserable building opposite the Faculty, was demolished, and a new one, called "Hôpital des Cliniques," erected in its place, where surgery and midwifery are carefully taught; new dissecting-rooms were substituted for the wretched places where anatomy was before cultivated; the Dupuytren museum was founded; a botanical garden opened; and the anatomical and pathological collections of the Faculty so enriched, that Orfila's name was attached to them as a lasting memorial of his wise and paternal government.

But Orfila was now called upon to take an active share in the higher branches of the administration connected with learning and medical science; his influence became immense, but he contrived to make many friends, and to render the greatest services by his great aptitude for public business, his vast experience, quick glance, and mastery of details.

Orfila successively took his seat in the Council General of Hospitals, and at the Board of Public Instruction. The profession gained much by his elevation, for it was through his exertions that the preparatory schools of medicine in various large provincial town were founded, and it was he who placed the examinations for the degree of Doctor of Medicine upon the present excellent footing.

The subject of this memoir obtained the usual marks of high favor at the hands of Government, and was successively made knight, officer, and commander of the Legion of Honor. He became accustomed to guide and regulate, and when the exalted man was thrust into private life by the destructive revolution of 1848, he felt the blow very acutely, and never recovered the shock.

Among all the claims which M. Orfila has to the gratitude of his countrymen there is one which will certainly be highly prized among us, and will remind our readers of those worthy members of our profession who, in England, have founded societies for the relief of the decayed medical man, his widow, or children. M. Orfila, at the period to which our narrative has arrived, founded a provident association for the benefit of medical men or their families; and for many years he was the President of the society. He constantly used his best efforts to promote its welfare, and succeeded in establishing it upon a sure and lasting basis. This society was not forgotten in the munificent legacies which M. Orfila made shortly before his death, and to which we shall presently allude.

But human prosperity is fragile; M. Orfila's career of usefulness and benevolence was arrested by the fall of Louis Philippe; he lost all his appointments, (except his professorship, which could not be taken from him,) and it is said that these changes have, to the hour of his dissolution, preyed upon his mind, and even hastened his death.

M. Orfila was not only displaced as Dean of the Faculty, but roughly called to account respecting the improvements and embellishments which had been made during his tenure of office; and the worthy and eminent man was, by envious detractors, sadly worried and taken to task. He endeavored to find comfort in scientific pursuits, and tried to regain his shattered health by a journey to the Pyrenees, but his friends saw that his powers were gradually failing.

Only a few weeks ago, M. Orfila resolved to make all his benevolent legacies before his death, a sort of defiance (as justly mentioned by Prof. Bérard) which the leveller of all human greatness resented by speedily snatching at his prey. More than £4000 were thus given by M. Orfila; firstly, to the Academy of Medicine, for prizes on medico-legal questions; secondly, to the Faculty of Medicine, for the preservation of the museum; thirdly, to the School of Pharmacy, for prizes; and to the Medical Benevolent Society for its praiseworthy purposes.

A very short time after these munificent gifts were announced, and whilst grateful addresses were being sent from all parts of France, M. Orfila was attacked with pneumonia, soon after his last lecture, delivered on the 4th of March. Drs. Chomel, Andral, and Rostan attended him with the greatest solicitude, but it was soon too plain that the illustrious patient must sink. He expired at half past seven in the morning, on

the 12th of March, and had, thirty-six hours previously, sought the comforts of the Christian religion.

The funeral was as numerously attended as that of Dupuytren and Broussais; all the distinguished men in the arts, sciences, medicine, and the government, as well as crowds of students, accompanied the remains of this great and good man to their last and peaceful abode. The corners of the pall were held by M. Berard, Inspector of Public Instruction; M. P. Dubois, Dean of the Faculty of Medicine; M. Dubois, (d'Amiens,) Perpetual Secretary of the Academy of Medicine, and M. Bussy, Director of the School of Pharmacy. Orfila is buried close to the tombs of Lisfranc and Barruel, the latter of whom was his first and much revered teacher.

The works left by M. Orfila are the following: 1. On Forensic Medicine, with an Appendix on Legal Exhumations, with twenty-six plates, four vols., fourth edition in 1848; 2. Elements of Medical Chemistry, two vols., eighth edition in 1851; 3. On Toxicology, two vols., fifth edition in 1852; and a great number of papers and reports on Toxicology and Forensic Medicine, which have so largely contributed in placing both sciences on their present improved footing, and have gained for their author an imperishable fame.—*London Lancet.*

Death of Robert James Graves, M. D.—This distinguished Irish Physician, whose numerous and valuable contributions to Pathology and Practical Medicine, in the Medical Journals, have made his name familiar to the American as well as European profession, died in Dublin, on the 20th of March last, at the early age of 56.

He was the youngest son of a dignitary of the Irish church, the Rev. Richard Graves, D. D., Dean of Ardagh, and was educated at Trinity College, Dublin. He graduated in Medicine at the Dublin Medical School, and after passing three years in visiting the chief Continental Schools, in 1821, commenced the practice of medicine in Dublin. He soon took part in the establishment of a private school of medicine, and having been elected one of the Physicians of the Meath Hospital, entered with great energy and zeal on the arduous career of a medical teacher. The school of which he was one of the founders, known as the Park street School, (now the site of St. Mark's Ophthalmic Hospital,) rapidly acquired a very high character. Here he first taught medical jurisprudence, subsequently pathological anatomy, but afterwards became associated with Doctor, now Sir Henry, Marsh, in the Chair of Practice of Physic. The Meath Hospital, however, was the great theatre of his most important labors. Here he set himself vigorously to work to reform the existing system of medical education. Hitherto, the student had to depend on himself for the acquirement of a knowledge of disease. Books were written, and lectures delivered, both of which avail but little without that actual practical knowledge of the various phenomena of disease to be gained at the bedside alone. Some years previously, it is true, Dr. William Stokes had commenced the system of actually instructing the student

by the bedside; but it remained for Dr. Graves thoroughly to incorporate clinical instruction with the other elements of medical education, and to cause its immense importance to be fully and generally understood and recognised. He soon found apt and zealous pupils, and many of the best and most accomplished practitioners now in Ireland, England, the Colonies, and the public service, were then numbered among Dr. Graves's class at the Meath Hospital, and many have lived to acknowledge with pleasure and pride the obligations they owed to his teachings, and the stimulus which his example lent to their exertions. Two among the number must be specially named—Dr. Richard Townsend and Dr. William Stokes, now Regius Professor of Physic in the University of Dublin. Of the latter it is not here the time or place to speak. To the former we may be allowed to pay a brief but well deserved tribute in passing. Hurried away by an untimely death, the works which he has left only serve to show how deeply the Irish school has to deplore the loss of one whose early labors gave such sure presage of a brilliant and successful career. Those acquainted with the literature of thoracic pathology will not need to be reminded of his essays in the "Cyclopædia of Medicine."

Thus energetically and ardently working and teaching, the example of Dr. Graves at this period exercised the best influence on the medical youth of Dublin. His labors, however, were not confined to those of teaching. From an early period in his medical career he evinced the highest talents for original observation, and the results of his inquiries began to appear in print, and to attract attention, from the masterly style of his delineations of disease, his graphic manner, and the clearness, judgment, and decision with which his views were enunciated.

Dr. William Stokes having graduated in Edinburgh, and having subsequently been appointed Dr. Graves's colleague at the Meath Hospital, these two names are henceforth to be met with together as teachers and fellow-laborers in the field of original research. Under their joint editorship appeared the valuable series of Meath Hospital Reports, which have connected the name of this institution with the progress of Irish medicine during the last thirty years.

In the year 1827, Dr. Graves was elected Professor of the Institutes of Medicine to the King and Queen's College of Physicians in Ireland,—a chair which he continued to fill for many years with great distinction. One of his most distinguished pupils thus speaks of Dr. Graves's success as a teacher in this department:—"I am glad to acknowledge my own obligations to the similar chair (Institutes of Medicine) in the University of Dublin, filled then by my distinguished friend, Professor Graves, well known throughout Europe by his contributions to physiology and clinical medicine. From him I first imbibed a taste for physiological inquiry; and under his guidance and direction my first studies upon that subject were pursued."—*Dr. Todd's Farewell Address.*

As a reformer in practice, Dr. Graves has done invaluable service; and in no respect more so than as regards the treatment of the typhus fever of Ireland. This disease, always endemic in the sister island, occasionally breaks forth as an epidemic visitation of the most fatal kind,

and several years are popularly memorable as "the fever years." Such were 1817, 1822, and lastly 1846–47. Having enjoyed ample opportunities of studying this fatal pestilence, Dr. Graves became not less distinguished as a practitioner than as a teacher and propagator of bold and enlightened views in the treatment of fever; and on no occasions were his *cliniques* at the Meath Hospital better attended than when it was known that fever was to be his theme. The views of treatment which prevailed at the period when Dr. Graves entered on practice were decidedly in favor of the lowering and depleting plan, whether by purgation or otherwise. In this respect, practice differed then very much from what it had been in the latter end of the preceding century. In the days of Harvey, Purcell, Cleghorn, M'Bride, Plunkett, Egan, and Quin, the tonic plan was followed, and with success; wine and other stimulants were freely exhibited. The propagation of the Hunterian pathology had, however, in subsequent years, filled the minds of men with antiphlogistic theories, to the exclusion of all others, and in these views the Dublin practitioners, with some honorable exceptions be it remarked, very freely shared up to the date of Dr. Graves's teachings. An intimate study of the disease, and a careful observation of the alarming symptoms of early prostration so common in Irish typhus, convinced Dr. Graves of the error of the practice in vogue, which consisted chiefly in withholding nourishment and administering purgatives. Against this system he took up arms, and waged a successful war, not, it may be imagined, without violent opposition. His views, however, soon gained converts, and, aided by his colleague and other enlightened practitioners, the old plan gradually gave ground to the new. There was nothing in which Dr. Graves took more real pleasure and pride than in the changes in practice thus brought about. "Let them write it as my epitaph, that I fed fevers," said he, on one occasion, to his colleague.

The careful support of the system by nourishment from an early period of the disease, and the courageous use of stimulants when indicated by symptoms of depression, now form the leading therapeutic principles in the management of fever cases with all the well-educated practitioners of the Irish school; but unquestionably to Dr. Graves is due the merit of promulgating these views, or at least of reviving the practice, which had fallen into disrepute since the days of the Quins and the Plunketts. Did our limits permit, we could dwell at considerable length on other important principles of treatment advocated by Dr. Graves. We can only refer to his papers "On the Use of Tartar Emetic and Opium in the Delirium of Fever," "The Employment of Acetate of Lead," etc. etc., all which will be found in his collected treatises on clinical medicine.

Independently of the publication of his various detached papers and monographs, Dr. Graves lent valuable assistance to the establishment of a periodical medical literature in Ireland. In the year 1830, the fifth and last volume of the "Dublin Hospital Reports" was committed to his editorship by Dr. Cheyne. Two years subsequently, the *Dublin Journal of Medical and Chemical Science*, the predecessor of the *Dublin*

Quarterly Journal of Medicine, was projected and established by Sir Robert Kane, then a student of medicine, and a pupil at the Meath Hospital. After the appearance of a few Numbers, Drs. Graves and Stokes became associated in the editorship of the periodical, and Dr. Kane having been soon forced to resign his connexion with it by his increasing devotion to chemical inquiry, it continued in the same hands till 1842.

In the original and review department of this journal, Dr. Graves was a large and constant contributor. In the year 1843, appeared the first edition of his "Clinical Lectures on the Practice of Medicine." Of this work, which passed through a second edition with much careful revision, and the addition of much valuable matter under the hands of Dr. Neligan in the year 1848, it is quite unnecessary for us to speak. It is well known to every clinical school in Europe.

As a lecturer, Dr. Graves was distinguished by a force and clearness of language, and an earnestness of manner, which irresistibly commanded attention, while his fine person and noble features won the admiration of his hearers. His style as a writer was at once simple yet nervous, and full of graphic power; and his delineations of disease are among the most successful of modern medical compositions. He was a strenuous advocate of the doctrine of contagion, and vigorously opposed the views advanced with regard to the non-contagious nature of cholera during its last outbreak. He was a firm supporter of the dignity and honor of his profession, and on the only occasion on which he descended into the arena of medical politics, he fought boldly and fearlessly, though unsuccessfully, for the rights of his brother practitioners. During many years Dr. Graves enjoyed a large and lucrative practice, and was much *recherché* as a consultant. For some time past his health had been only indifferent, and of late he suffered from attacks of atonic gout. His last illness was attended with considerable suffering, the lungs being much congested. He had also violent paroxysmal attacks of cough, which the slightest exertion was sufficient to induce. Symptoms of a purpuric condition of the blood, accompanied by anasarca, were subsequently manifested. These sufferings were borne with Christian fortitude and complete resignation. Dr. Graves expired in the forenoon of the 20th of March, at the age of 56.—*Lon. Med. Times & Gaz.*

RECORD OF MEDICAL SCIENCE.

MATERIA MEDICA AND THERAPEUTICS.

Dr. Bernard's Experiments on the Elective Elimination of certain Substances by the Secretions.—Dr. Cl. Bernard has written a very interesting account of certain experiments made by him "on the elective elimination of certain substances by the secretions, and in particular by the salivary secretion." He remarks *in limine* that this secretion has not been examined with the same care as the urine, bile, milk, &c., in

regard of the circumstance alluded to; and that it remains to be explained how the saliva chooses some, while it rejects other substances equally soluble in it. He performed two sets of experiments, which were ingeniously contrived and carefully repeated.

In the first series of experiments he injected into the right jugular vein a solution of yellow prussiate of potash, of iodide of potassium, and of grape sugar, and immediately thereafter he detected the second substance in the saliva, but neither of the other two; while in the urine, the prussiate of potash could be detected, but neither the iodide nor the sugar. Twenty-five minutes after the injection, abundance of the prussiate of potash was found in the urine, only a trace of sugar, but still no iodide. The saliva remained as before. The secretions were tested every half-hour, but no change occurred till the end of two hours, from the time after injection, when the iodide of potassium at length appeared in the urine. Neither the prussiate nor the sugar appeared at any time in the saliva, which eliminated only the iodide of potassium; and it is worthy of remark that this salt appeared immediately in the saliva, while it was not detected in the urine for two hours. When, however, the solution of the iodide was stronger, it appeared sooner in the urine, though never within the hour.

In the second series of experiments, M. Bernard injected these three substances in solution, severally into the veins of the same animal at different times, as well as into the veins of different animals, and he always found that they comported themselves in exactly the same manner. Such was the case, likewise, when they were introduced into the stomach. Both grape and cane sugars, like the prussiate of potash, never appeared in the saliva, while they were eliminated more slowly by the urine. This observation seemed to contradict the assertions of some authors, regarding the saliva of diabetic patients, but on actually testing this secretion in 'la Charité,' M. Bernard found that there was no trace of sugar in the saliva, while, however, it could be detected in the expectoration from the bronchi, of such patients as had phthisis combined with diabetes. Neither sugar nor prussiate of potash would seem to pass into the bile, or into the pancreatic juice, in ordinary circumstances, but when sugar was strong in the blood, it was found in the bile, but never in the pancreatic juice.

In regard to the elimination of sugar from the economy, M. Bernard has noted a very curious fact, viz., that though the mammary secretion naturally contains a kind of sugar, it does not allow either cane or grape sugar to pass by it. Sugar of milk is much more difficult of fermentation than the other kinds of sugar, and may thus be distinguished from them.

When the iodide of potassium was injected into the vein of a dog, or introduced into its stomach, it could always be detected in the saliva within forty seconds. It also passed with rapidity into the tears, and into the pancreatic juice, while it passed with much greater slowness into the bile, in which it was often difficult of detection.

M. Bernard also injected lactate of iron into the veins of dogs, and never found it eliminated by the saliva; in which respect it agreed with

the sugars and prussiate of potash. When iodide of iron was carefully injected into the vein of a dog, both iodine and iron were found in the saliva. In another dog, a solution of the iodide of potash was introduced into the stomach, by a fistulous opening, and afterwards another solution of lactate of iron; both substances were thereafter detected in the saliva, showing that the iodine gave to the iron the capability of being eliminated by the saliva.

M. Bernard at present merely wishes to call attention to these interesting facts, and does not offer any explanation of them. But the property which certain substances seem to possess, of being eliminated by different secretions, is not their only peculiarity. Their period of sojourn in the economy is also importantly different. Thus, M. Bernard remarks, that the iodide of potassium and other substances, perfectly soluble, and really dissolved in the blood, remain for a certain time within some of the organs of the body; and he finishes his paper with the following account of the experiments made by him, in order to investigate this sojourn of the iodide of potassium in the animal economy.

He introduced into the stomachs of several dogs, which had permanent salivary and biliary fistulæ, a solution of two grammes of iodide of potassium. The same day the urine of these dogs exhibited the reaction of the iodide; next day it could be detected neither in the bile nor in the urine; and on several days following, no trace of it was found in these secretions. It seemed to be completely eliminated from the system; but examination of the saliva showed its presence still. The gastric juice also contained the iodide, both because it contained saliva, and also because it was furnished directly with it from the mucous membrane of the stomach. This persistence of the iodide in the saliva and gastric juice continued for three weeks, and possibly it may have continued longer. Purgatives have a great effect on the sojourn of the iodide in the economy; indeed, so much is this the case, that if purgatives were employed, soon after the introduction of the salt into the stomach, a few days sufficed for its total disappearance from all the secretions.

In concluding, M. Bernard observes, that these experiments show that substances which are soluble, and capable of circulating in the organism without producing mischief, present two sets of phenomena worthy of remark.

"1st. Some substances never pass into certain determinate secretions, *e. g.* the yellow prussiate of potash, cane and grape sugars; others show themselves in all the secretions, only with greater or less rapidity, *e. g.* the iodide of potassium.

"2d. Some of these substances are eliminated completely and rapidly from the economy, *e. g.* the yellow prussiate, sugars, &c.; while others are only *partially* eliminated by the urine, and may remain in the organism, showing themselves in other secretions for a longer or shorter time. The iodide of potassium offers a remarkable example of this prolonged sojourn of soluble substances in the organism,—a sojourn which, in the case of that salt, is prolonged, because the portion not eliminated and re-appearing in the saliva, instead of being expelled from the system

is constantly thrown back into the stomach, whence it is taken up by the circulation, and returned to the saliva, and so on.

"The chief conclusion," he continues, "to be drawn from this work is, that one cannot refer to any general law, the manner in which these substances act in the organism. The experiments made on one saline substance, can teach nothing regarding another: no one could have foreseen, for example, that the iodide of potassium, and the yellow prussiate of potash, salts equally soluble, should offer, in respect of their passage into the secretions, and of their elimination from the body, differences very striking. Special researches on each particular substance are necessary, in order to establish physiological history, which ought to be intimately connected with its mode of action as a therapeutic agent."—*Archives Générales de Medecine, January*, 1853.

Case of Suffocation Produced by Sulphuric Acid.—The interest of this case lies in the fact that death was caused by the action of the acid on the respiratory passages, without touching the organs of digestion.

A woman was found dead in her bed-room; she was seated on a chair, her head bent back, resting on the bed, and drooping towards her right shoulder. Her mouth was full of tough mucus, the lips, teeth, and gums presented the appearance of being corroded by an acid. Her right hand, placed across the body, held a small phial labelled *sulphuric acid, (poison.)* It contained about half a drachm of the acid. Death had occurred a considerable time before; the extremities were already cold.

Autopsy.—The tongue was contracted, the epiglottis corroded and reduced to a little triangular tongue with indented edges. The vocal cords were destroyed, particularly the right. The mucous membrane of the trachea was also removed, and the cartilages had the appearance of being dissected. The acid had penetrated into the two lungs, attacked the parenchyma, perforated the left pleura, destroyed the costal layer, and roughened the subjacent ribs.

On the surface of the lung there was a layer of sulphate of lime; the arch of the aorta, the superior cava, and the innominata veins contained clots having the appearance of dried wax. No trace of acid could be found in the stomach or œsophagus. The epithelial lining was quite entire, and the stomach only contained some mucus.

Dr. Gall remarks, "that he believes no similar case has been recorded. It is well known that the impression produced instantaneously on the tongue by the caustic, occasionally causes contraction of the pharynx sufficient to prevent deglutition, and death has been caused by the progress of the inflammation and tumefaction of the pharyngeal mucous lining and tonsils, when not a drop of acid has entered the stomach; but no case has hitherto been recorded in which the acid had penetrated into the bronchial tubes. Could this have been caused by a fit of coughing raising the epiglottis, and drawing the liquid into the trachea? Probably enough, and the acid afterwards would have run gradually into the minute ramifications of the tubes, causing corrosion as it passed along."—*Glasgow Med. Journ. from Dr. Gall in Journal de Chemie Médicale.*

PATHOLOGY AND PRACTICE OF MEDICINE.

Note on the Breathing-Movements in the two Sexes, and on the alleged Influence of Stays in producing Pulmonary Consumption. [Excerpt from a Clinical Report.] By W. H. WALSHE, M. D., Fellow of the Royal College of Physicians, London; Professor of Medicine and Clinical Medicine at University College, London; etc.—Here, then, gentlemen, is a woman, (laboring under dilatation of the heart, with probable tricuspid regurgitation, and old pericarditis, general bronchitis, congestion, and œdema of both lungs,) whose maximum thoracic respiration-movements are translated from the upper to the lower regions of the chest. Her breathing-play is inferior-costal and abdominal, instead of being infraclavicular. She breathes, under the influence of her complicated malady, as the healthy male, and may be said to be *unsexed, quoad respiration*, by her disease. Observe, however, that this perversion only holds in *calm* breathing; the moment she takes a *forced* inspiration, the infraclavicular regions rise abruptly, fully, and equably, (she is non-tuberculous, be it remembered,) after the type of health. In the state of forced respiration she breathes—at least in the present point of view—precisely as both sexes breathe when the contents of the thorax are sound.

What is the cause of this perverted condition of breathing-movement in the female, when laboring under certain thoracic diseases? A preparatory point to determine is, the *how*—and, if possible, the *why*—of the difference in the calm breathing-movements of the sexes in health. And to this preliminary question we will confine our inquiries to-day.

The healthy, calm breathing of the male is essentially effected by the descent of the arch of the diaphragm; the amount of abdominal is greater materially than of pectoral expansion-movement; and the former commences sensibly before the latter, which is, besides, confined almost exclusively to the lower ribs. The male action is inferior costo-abdominal. But is not the ordinary breathing of the female carried on by similar play of the diaphragm? Judging from outward appearances, no. In the female the abdominal expansion is almost null, and always slightly posterior in point of time to the upper costal; neither do the lower ribs move notably, whereas the clavicles and infraclavicular regions rise and fall with freedom. The male seems to the eye to breathe with the abdomen and lower ribs from the sixth downwards; the female with the upper third of the chest alone. These statements refer to adults only.

To adults only, I say; for it is yet a point *sub judice*, whether, and to what proportional extent, the discrepancy of adult life prevails in infancy and early youth. I have examined a considerable number of female children, aged between four and ten years, who had never worn stays, or any substitute for these, and found in them the predominant infraclavicular action of the adult. But the excess of upper movement is very positively less than among their seniors. On the other hand, Boerhaave, one of the earliest observers of the difference in the respiratory action of the sexes, speaks as though the boy and girl of "one year old" breathe as distinctively, the one with the abdomen, the other with the

chest, as the full-grown man and woman. *Per contra*, Beau and Maissiat affirm, that in earliest infancy, and often up to the third year, the respiration is abdominal in the female as well as in the male. It has appeared to me, too, that in earliest youth, when the pectoral and ventral modes of breathing become obvious, the chest action in the female is more *general* than at a later period, and less limited to the upper regions. Age, then, does seem to me to exercise an influence upon, or to be connected with, the typical breathing of the sexes.

Social position exercises none; the washerwoman and the peeress breathe exactly alike.

The habit of forced breathing is not without modifying power on the calm action in both sexes. For instance, the extensive play of the upper regions in full-chested *soprani*, kept up in the exercise of their art for many hours daily, ends by increasing the amount of infraclavicular movement in ordinary conversational breathing. It has appeared to me, that, even in *tenor* singers, some perversion of the ordinary condition—some degree of unnatural infraclavicular movement—may be detected in calm respiration.

But what influence does dress exercise? Looking at an adult female, and remembering her habit of drawing in the lower ribs by apparatus more or less unyielding, the inference seems unavoidable, that the reason why a woman does not breathe like a man is, that her mode of dress mechanically obstructs phrenic play. Certain mischiefs entailed by tight lacing we see positively in displacement of the liver; in mis-shapement of it, so that its height is made to exceed more or less its breadth, (as ascertained the other day, for instance, in the body of E. Smith, University College Hospital Female Case-Book, Vol. IX., p. 130;) in alterations of its texture, so that true lobular substance is replaced to a greater or less depth by induration-matter functionally inert. We see them exhibited in displacement of the heart,—in narrowing of the lower intercostal spaces, etc. And if, from certain of the facts concerning age just passed in review, we are forced to the admission, that the activity of infraclavicular respiration-movement in the female is in the main designed by nature, and independent of extraneous influence, still I cannot help thinking that the great excess of that movement, and the limitation of thoracic play to the upper thorax in the civilized adult female, are due in no small measure to the use of unyielding cases interfering with inferior costal and phrenic action. The agricultural female laborer, who knows not stays, breathes more like a male than a town female. Besides, during sleep, the conditions of pectoral and ventral action in the female are much less strikingly different from those in the male than in the waking state; the waist is relieved for a time from constriction. And, further, the male and female dog breathe almost exactly alike, as do also the horse and mare; the action is abdominal and lower costal.

It would seem, then, that stays are in part productive of the peculiarity of adult female breathing, but certainly are not its sole cause. Boerhaave, and his commentator, Haller, however, holding that the sexual difference obtains from birth, looked upon the free upper costal action in the female as a pre-ordainment to meet the difficulties of preg-

nancy. "Nisi hanc," says Boerhaave, "in fœminâ diversitatem natura fecisset, gravidæ perpetuâ dyspnœâ laboravissent, æque ac viri hydropici." But it seems here to be forgotten, that if the illustration be sound, ascitic females ought to escape dyspnœa. The final cause of the difference in the sexes is of less interest, however, than the mechanism by which it is actually worked out; but of this, also, nothing is known. Haller ascribed the predominant costal action in females to the greater flexibility of their bones and cartilages (Op. Cit., pp. 98, 145.) The upper interspaces are relatively wider in the female, the lower in the male; but is this effect, or cause, or neither one nor the other?

I have just reminded you of some of the evil influences exercised by the use of tightly-laced, unyielding stays on the liver. Do they inflict mischief on the lungs? It appears to me this will altogether depend on the amount of constriction. If this be simply sufficient to transfer the maximum chest-play from the base to the apex of the thorax, (or, rather to magnify somewhat the breathing difference superiorly and inferiorly natural to the female,) I cannot very clearly descry what evil is to come to the lungs, especially if the stays be cut bias, and be formed of yielding material. If, on the other hand, rigid wood-work or metal plates be used to stiffen stays of which the main material is hard and cut straight, then it is conceivable, *à priori*, that serious evil may come to the lungs. Remember, however, the wide difference in the statical and dynamic mechanism of the thorax and abdomen, and you will feel at once that the fact of serious compression of the liver being produced by tight lacing gives no shadow of proof that the pulmonary organs must suffer to similar amount, or even in similar fashion. I know not, as matter of clinical experience, what the mode of disturbance is which constriction of the base of the chest actually and demonstrably entails on pulmonary action or pulmonary structure. But such ignorance as this is not commonly avowed; on the contrary, the mass of information on the point is held to be positive and of ominous, most ominous, quality. Dr. Copland, for instance, writes, in a recent and otherwise admirable article, that the use of stiff stays produces "ultimately a morbid state of the blood, *tubercular deposition, especially in the lungs*, hæmoptysis, anæmia, etc." But it may be fearlessly asserted, that neither Dr. Copland, nor any other man living, could prove that the abuse of stays produces the specific disease, tubercle. I look in vain for evidence of such power in the writings of those who most loudly proclaim its existence; declamatory passages, arguing *à priori* from a loose physiology to a yet looser pathology, are all I have ever succeeded in finding—at least, with one seeming exception—a seeming one only. Mr. Farr, in truth, speaks thus: "Thirty-one thousand and ninety English women died in one year of the incurable malady, consumption. Will not this impressive fact induce persons of rank and influence to set their countrywomen right in the article of dress, and lead them to abandon a practice which disfigures the body, strangles the chest, produces nervous or" [this "or" is probably the "etc." of Dr. Copland] "other disorders; and *has an unquestionable tendency to implant an incurable hectic malady in the frame.*" Strange, Mr. Farr should forget to compare the relative mor-

tality of the sexes in elucidating this question. Look at this table giving the mortality from consumption in three years to a million living of each sex in England and Wales:

YEARS.	Deaths from Phthisis to 1,000,000 living of each Sex.	
	Males.	Females.
1837	3,771	4,155
1838	3,783	4,077
1839	3,722	4,015

What evidence does this table give of the dependence of tuberculization on stays? It simply shows that the phthisical mortality of females is somewhere about 300 per 1,000,000 living greater than that of males. Granting that the female excess is really due to stays, what scientific justification does its amount give of Mr. Farr's startling phrases? None, absolutely none. But let me assure you, no particle of evidence exists that the moderate excess of female destruction is really traceable to the abuse of stays. Not a few arguments might be adduced, tending to prove their absolute innocence. Thus, in France, as is well known, females rarely use stays until the afternoon; in England, women tighten themselves up the moment they rise in the morning; yet the excess of female phthisical mortality over the male is greater in France than in this country. Again, in certain parts of Europe, the men tighten themselves at the base of the chest, so as to produce a tolerably fair image of the figure of a wasp, and yet they do not seem thereby to increase their relative quota of phthisical mortality. Further, it will be conceded, that tight lacing is, as a rule, pushed to greater lengths among metropolitan than among rural female populations; so that, if the influence assigned to stays be other than a figment of the brain, the plus destruction of women over males ought to be relatively greater in London than in the country. Now, such evidence as I can get at tells in precisely the contrary direction. Thus, examine these figures:

Kent County.

	Males.	Females.
Population in 1841 - - - - -	232,228	236,885
Absolute deaths from Phthisis - - -	726	778
Deaths from Phthisis per 1,000,000 living -	3,126	3,242

Metropolis.

Year.	Males.	Females.
Population in 1838 - - - - -	913,077	971,767
Absolute deaths from Phthisis - - -	4,057	3,630
Deaths from Phthisis per 1,000,000 living -	4,443	3,735

So that, actually, where, by fair inference, the amount of stay-constriction is greatest, and its prevalence widest, (in the Metropolis,) females are destroyed by phthisis to a less degree than males; whereas, amid a country population, which we may honestly assume to undergo a less mean amount of tightening, females die consumptive in notably larger proportion than males.

No, gentlemen, if the abuse of stays produces consumption, its power to do so most indubitably remains to be proved; and while the laws of

an enlightened pathology point to the excessive improbability of an essentially diathetic disease springing from a mechanical cause, I entreat you not to adopt the popular creed, that "stays cause consumption," unless on direct and unimpeachable logical evidence. There is quite enough in the demonstrable evils entailed by tight lacing to justify you in warring against the abuse; you have no need to support your arguments by the unfair appeal to an imaginary mischief.—*London Med. Times and Gaz.*

Case of Bite of a Young Woman by a large Cobra de Capello. By Wm. Chalmers, M. D., lately Surgeon H.E.I.C. service, Bengal.—On 25th of June, 1819, at 11 P. M., I heard from the outside of my house, at Barrackpore, near Calcutta, a loud call for my immediate attendance. It proved to be from Colonel, afterwards General Sir Wm. Lumley, whom I found with a lanthorn in his hand, entreating me for God's sake to come with him at once, as his *mehturance* (female sweeper) had been bitten by a cobra de capello. I took in my hand a phial of solution of ammonia, of the usual strength, a case of scalpels, and a large sized elastic gum male catheter. On arriving at the hut occupied by the poor woman and her husband, I found her stretched outside on the ground, her head resting on her husband's knee. Her body was cold and collapsed; there was neither breathing nor pulse; her eyes were wide open, and insensible to light; the mouth was also wide open; tongue cold; in fact life was, to all appearance, extinct. How long she had lain in this position could not be ascertained; her husband conjectured an hour at least. On the back of the right hand were discovered two punctures, as if made by a needle, about an inch and a-half apart, marking the entrance of the poisonous fangs of the snake. Upon each puncture there was a drop of nearly colorless fluid, without any hæmorrhage, tumefaction, or ecchymosis.

Here was a case sufficiently discouraging, if not, to all human appearance, hopeless. However I resolved not to abandon the poor sufferer, while the kind-hearted master entreated me to do what I could.

Ordering bricks to be heated for application to the præcordia and the feet, the first step of the treatment was to pour down her throat a teaspoonful of the ammonia, with as much water, but all power of deglutition being lost, some difficulty was experienced in accomplishing my object. By the aid, however, of the catheter as an œsophagus tube I succeeded admirably. The next step was to cut out and pare off the integuments and subjacent cellular and muscular tissues, extending my incision about one-fourth of an inch beyond the punctures. From the large wound, which was of an oval shape, not a drop of blood escaped in this operation. The husband was now directed to apply his mouth to the wound, and suck with all his powers, which he proceeded to do most readily, the natives having great faith in such a measure. This he continued, with all the energy he was capable of, for fully half-an-hour, without succeeding in procuring any moisture, while I repeated the ammonia steadily every ten minutes, till a full ounce was consumed. At length our perseverance was rewarded by some hopes of a restora-

tion, for the poor distracted husband leaped up in extasy of joy, exclaiming in his own language, "*Kohoo àtá sahib,*" (blood is coming, Sir), showing his tongue covered with the vital fluid. In a few minutes more the action of the heart was faintly perceptible; the pulse at the wrist was just traceable in a thready thrill; she moved her head, gave a deep sigh and sat up. Thus our persevering efforts for nearly two hours, were rewarded by the rescue of a fine young healthy woman from certain death;—in truth her recovery might be considered, without any hyperbole, a resurrection from the dead. The only treatment pursued afterwards was the free cauterization of the wound by *Nitras Argenti*, —the application of a pledget of lint dipped in melted *Ceratum Resinæ*, covering the whole with a hot poultice. The wound healed kindly by granulation, and she was able to resume her duties in a few days.

In this remarkable case the powers of the ammonia were proved most incontestably as a safe and sure remedy, as it has ever since and during my time in India—extending now to a quarter of a century—been esteemed and experienced to be, in all bites of venomous reptiles. Indeed, such is the confidence of the natives in the remedy, and more especially the native soldiery, who in their huts are much exposed to these injuries, that the moment any one gets bitten, he runs to the nearest European officer, calling out for the *Safed Dâwy*, "the white medicine," assured that with a few doses of that, he is safe, and disappointment in the curative effects is never experienced. By "the white medicine" is meant a preparation of ammonia, which used to be imported in great quantities from England, and generally kept at hand by every officer,—the old fashioned *Eau de Luce, Liquor Ammoniæ Succinatus.*

One cannot help regretting, that the medical officers of the hospital into which that poor unfortunate fellow, who was bitten in the Zoological Gardens last year, was admitted, were not apparently sufficiently acquainted with the powers of ammonia in such cases. If they had been, it would no doubt have been had recourse to.—*Glasgow Medical Journal*, April, 1853.

Gangrenous Metastasis from the Lungs to the Brain. By RUD. VIRCHOW.—I have already, in my work upon inflammation of arteries, (Virchow's Archiv., Bd. I., S. 332,) communicated a case where, in a patient who died of gangrene of the lungs, there were found in the mesentery gangrenous deposits, which more minute investigation proved to be lodged within the branches of the mesenteric artery, such deposits having come from the gangrenous lung by the pulmonary veins, and been propelled from the left side of the heart into the systemic circulation. As this form of metastasis has not yet been much investigated, the relation of a fresh case may serve to arouse the attention of pathologists.

Anna Maria Schwing, of Buchold, aged 21, came to the Julius Hospital, May 18th, 1852, suffering from melancholia religiosa, accompanied by occasional maniacal fits. From June 10th to two days before her death, she exhibited the most determined abhorrence of food. From July 8th,

there were symptoms of severe affection of the lungs, characterised by fetid and blood-stained sputa, paroxysms of asthma, and uncontrollable fits of cough. Her excited state prevented a more accurate examination. Death ensued August 8th, at a quarter past seven A. M., without any further cerebral symptoms.

Examination of the Body, August 9.—Skull-cap thin, but normal; sinuses empty, but superficial; cerebral veins full; numerous granulations (gland. Pacchioni?) along the sinus long.; considerable serous effusion at the base of the skull and in the ventricles; cerebral substance firm. In the left ventricle, and extending over both the optic thalamus and corpus striatum, there was a discoloured, dirty grey surface, under which was a whitish semifluid, or crumbling mass of limited extent. Upon further examination, four similar spots were seen upon the posterior surface of the hemispheres, under the pia mater, and in the sulci; they consisted of a white, semifluid, stinking substance, surrounded, as in the ventricle, by a dirty grey circumference. The microscopical appearances of this substance showed that it consisted of an amorphous granular detritus, with long, spear-shaped, fat crystals, (such as I have shown to occur often in gangrene of the lung,) pigment masses, and altered blood-discs. Parts of the mass were traced, under the microscope, into the arteries of the pia mater.

Old adhesions on both sides of the chest; recent effusions of lymph over gangrenous portions of the visceral pleura. The right lung was torn in separating its adhesions; and, from the fissure, there issued a thick, dirty, grey, and partially brownish, stinking substance, which had been enclosed in a cavity with defined walls. There were many other similar accumulations scattered throughout the pulmonary substance, one as large as a hen's egg. The microscopic characters corresponded with those mentioned in the cerebral deposit.

It may be inferred, that, in consequence of imperfect nutrition, gangrene of the lung first ensued; then small granular particles became detached, entered the left side of the heart by the pulmonary veins, and thence were driven through the carotids to the pia mater, where they spread the decomposing process to the structure of the brain. The spots were of limited extent, the surrounding vessels and tissues being normal.—*Virchow's Archiv.*, 1853.

Dr. Kirkes observes, in speaking of the detachment of fibrinous deposits from the interior of the heart: "The finely granular material resulting from their disintegration, mingling and circulating with the blood, may give rise to various disturbances indicative of a contaminated state of this fluid, producing symptoms very similar to those observed in phlebitis, typhus, and other analogous diseases." This remark may be extended to disorganization going on in the lungs, and perhaps in other organs; and the cases related by the different authors who have written upon this subject should stimulate those upon whom the responsibility of making *post-mortem* examinations falls, to investigate, more thoroughly than has heretofore been done, the condition of the interior of arteries and veins, both in their main trunks and in the immediate proximity of diseased tissues.—*Lon. Med. Times & Gaz.*

OBSTETRICS.

Treatment of Chronic Abscess of the Breast and Milk Fistulæ.—Employment of Iodine Injections. [Cases under the care of Mr. BIRKETT.] —We have been much gratified by watching the result of the treatment pursued by Mr. Birkett in several cases of chronic inflammation of the breast, attended with sinuses and long continued suppuration, which have recently been under his care. This form of disease, as the result of neglected milk abscess, falls, we have no doubt, pretty frequently under the observation of most of our readers, and is often very troublesome to cure. The breast becomes affected with solid œdema, the sinuses, usually running in several directions through and behind the gland, are most difficult to close, and, by the constant discharge from them, the patient's powers become much undermined. In an extreme case of this description, which had lasted for many years, we not long ago saw Mr. South perform excision of the whole diseased mass, believing that to be the shortest method of getting rid of a useless part, which had become a serious evil to the patient. The remedies usually employed, are, as it is well known, support to the part, and the laying open freely of the sinuses, or the injection of them with various irritating fluids. Mr. Birkett's treatment consists in the employment of iodine taken internally, applied as an ointment over the tumor, and used also as an injection for the sinuses, whilst at the same time the part is carefully supported and subjected to gentle pressure by means of a bandage. The power of iodine, as a means of exciting the absorption of inflammatory products is well known; and, as an application to the lining membrane of sinous abscesses, it has for some time been employed on the Continent, and, less generally, in this country also. The success which has attended Mr. Birkett's method of treatment has been, as the following case will show, most encouraging.

Elizabeth Wiles, aged 26, the wife of a farm laborer, was admitted January 6th, 1853. Three years ago, while suckling, she suffered what from her description would appear to have been an attack of acute inflammation, both of the left mammary gland and of the surrounding structures. Her child was then eleven months old, and the disease appeared to have been excited by inflammation of the lymphatics of the arm from a sore on the finger. It was so severe as to confine her to bed for ten weeks, and to necessitate the employment of great number of leeches. It ultimately subsided considerably without having occasioned any abscess. The swelling, however, never quite disappeared, but after a time it again began to increase; and a year subsequent to the first attack, a large chronic abscess had to be opened, which never afterwards healed. In September, 1852, she was again confined. The disease of the breast having resisted the persevering treatment of several practitioners in the town where she lived, and her constitutional powers being evidently very much reduced by the long-continued and profuse discharge of pus which it produced, she was ultimately recommended to come up to town, in order to have Mr. Birkett's opinion as to the propriety of excision. On admission, she was emaciated, and of a somewhat hectic

appearance; the discharge from the sinuses was very profuse, and the whole breast much indurated. She was then suckling with the right breast.

Mr. Birkett advised her to wean her infant, and ordered her to be confined to bed, with a poultice over the part for a few days, until the state of excessive irritation which appeared to exist had somewhat subsided. He then prescribed for her the following mixture :

℞. Potassii iodidi gr. iij., infus. gent. ℥i., ter die sumend.

The breast to be wrapped in lint spread with ung. plumb. iod., and the whole supported by a bandage carried round the shoulder. On the 23d, the symptoms having already begun to amend, the injection of all the sinuses with the tincture of iodine (London Pharmacopœia) was performed by means of a tube carried to the end of the sinus. The treatment as above was persevered in, and after the expiration of a week the injection was repeated, and again after another space of two weeks. At present, March 15, the sinuses are quite healed; the gland has been reduced very nearly to its natural size, and the patient has gained in general health to a point beyond what she has enjoyed since the commencement of the disease. With the exception of the first few days, she has been allowed to be out of bed the whole time, and full diet has been allowed her. On each occasion that the injection was used, it produced considerable smarting pain, and was followed by a temporary increase of swelling and discharge, which very quickly subsided.

We scarcely need point out the advantages of the above plan of treatment over the old method of laying open the sinuses. In the latter the incisions have to extend wide and deep, and they involve considerable hæmorrhage, and, for a time, increased constitutional irritation and great discharge of pus. Other cases of a similar nature lately brought under Mr. Birkett's charge, in which the iodine cure has been practised, were the result of common milk abscess, from which the above, as will be seen, differs in some particulars.

Prevention *is* better than cure, and, as we believe, there are few diseases more thoroughly within the reach of prophylactic measures, than is milk abscess, we cannot dismiss the subject without saying a few words on that head. The history of this disease is in most cases easily told. A woman of delicate skin is confined, perhaps for the first time; lactation commences, the cuticular investment of the nipple, irritated by the mouth of the child, becomes cracked and fissured, each application of the infant to the breast occasions torment to the mother, and she avoids it as much as possible. The child is allowed to suck only on the sound side, the milk accumulates in the other breast, and slight inflammation is set up, to be aggravated by the increasing dread on the part of the patient of the natural method of relief, the evacuation of the milk. An abscess is the result. Now, how was all this to be avoided? In most cases pregnant women consult their medical advisers on sundry little points some time before their confinements. Let him on those occasions enquire as to the state of the nipple; and should the skin be found to be delicate, the daily application to the part of an alum wash, decoction of oak bark, or some other astringent, should be recommended. By

such means the skin may be hardened, tanned in fact, and rendered just as capable of resisting irritation as that of the finger. In other cases milk abscess depends on the non-development of the nipple. The surgeon should take care that a shield be provided beforehand, and that his patient knows how to use it properly.

But, supposing that, with the greatest care, abscess has proved unavoidable, there are still measures by which the disease may be prevented from passing into the deplorable condition in which we have noted that the patient in the above case came into Mr. Birkett's hands. We have repeatedly heard Mr. Paget observe, that, among his out-patients at St. Bartholomew's, he never has any opportunity for trying the various vaunted injections for the cure of sinuses in the breast, because the latter always heal of themselves. We have very carefully watched Mr. Paget's practice, in which mammary abscesses are very common, and can most fully confirm this statement. His treatment consists in the free evacuation of all collections of matter, and in the internal exhibition of tonics. A generous diet of meat and beer, with full doses of quinine or iron,—such are the remedies under which improvement in the local and general condition of the patient seldom fails to become rapidly manifest. It must, however, be admitted that the applicants, as out-patients, do not include a small class of peracute cases in which the symptoms are often too severe to allow of the patient's leaving her bed. The systematic avoidance of antiphlogistic measures in the treatment of local suppurative inflammations is daily becoming more and more common, and in no respect has modern practice more strikingly advanced than in this. It affords, too, a good illustration of the application of minute pathological research to actual every-day practice. Those of our readers who had the good fortune to hear Mr. Paget's lectures on inflammation, delivered before the College of Surgeons three years ago, will remember how unwillingly the Professor admitted the existence of any increase in formative power in that condition. This view, founded as it was on theoretic reasoning, and microscopic observation of the process, has since been advocated by other pathologists, including some of the German school, and it is interesting to observe how, upon emperical recommendations merely, the line of practice which it would suggest is rapidly coming into vogue.—*London Med. Times and Gaz.*

Statistics of the Lying-in Hospital at Berlin.—The number of accouchements from 1st January, 1836, till 31st December, 1841, was 4124, of which 1435 were *primiparæ*. The number of women delivered in the hospital was 1349, of whom 27 died. The number delivered in their own houses was 2775, of whom 33 died. The number of twin cases was 58. Of the 4182 children, 2141 were males, 1997 females, and of 44 the sex is not given. Of 4080 born at the full time, 262 were still-born; of these 56 were in the hospital, and 206 in the patients' houses. 102 were born before the full period. Presentations —of head 3846, face 26, brow 3, breech 98, footling 63, knee 2, 83 completely irregular. In 61 cases of premature labor the presentation could not be discovered. 3572 deliveries took place without assistance;

while in 552 the following assistance was required:—In 358 the forceps were applied; 101 extractions of the child; 2 irregular presentations rectified; 14 turning on the head, 1 on the breech, 75 on the feet; 7 forced deliveries, 7 premature deliveries; 6 cases of perforation; 8 of breaking down the head; 1 embryotomy; 2 cæsarian operations during the life of the mother, 1 after death; in 9 cases the cord, having prolapsed alongside of the head, was replaced; the placenta was artificially removed in 110 cases; in 3 the perineum was incised.

There were 67 cases of contraction of the pelvis from rickets. Of these, delivery was effected in 3 by the cæsarian section, in 1 by embryotomy, in 5 by perforation, in 8 by breaking down the head, in 5 by inducing premature labor, in 41 by the forceps, and in 2 by bringing down the feet.

Of the above 67, 9 mothers died; 2 after the cæsarian operation, 1 after embryotomy, 1 after perforation, 1 after breaking down the head, 2 after difficult delivery by the forceps, and 2 of hæmorrhage, following in one case, perforation, in the other, the application of the forceps.

In these cases 36 children were delivered dead, 32 (1 case of twins) were delivered alive.

Of the children born dead 5 were delivered by perforation, 8 by breaking down the head, 1 by embryotomy, 1 by artificial premature birth, 5 by turning and extraction by the feet, 1 by delivery by the feet, 14 by application of the forceps, and 1 by the cæsarian operation.—*Glasgow Med. Journ. from A. Lereboullet und M. Ruefz. Zeitschrift fur Geburtskunde.*

Upon the Destruction of the Puerperal Miasma in Lying-In Hospitals. By Dr. Busch.—The means employed by the author consist in heating the room to a high degree with dry air. This is effected by round iron stoves placed in the centre of the room, and connected with the chimney by metal tubes. The heat can be raised to 50.60° R. (about 155° F.) This must be kept up for two days, during which time all furniture and utensils are to remain in the room.

In March, 1851, puerperal fever invaded the Berlin Lying-in Hospital with remarkable severity; nearly all the patients suffered, and the Institution was closed for six weeks, during which time there was the most careful ventilation and purification. These means proved insufficient. Upon the re-opening of the hospital, all the new patients became attacked by the disease a few days after delivery. Then the author tried the plan here detailed in every room in the house. The effect was surprising; no fresh attack occurred during the whole summer. The same measures were adopted some time afterwards, and with the same success. —*London Med. Times, from N. Ztschr. für Gebwitsk.*

SURGERY.

On a simple Method of ascertaining, without the use of the Catheter whether the Eustachian Tubes are pervious; with some observations on the Treatment of cases of Obstruction in these Tubes. By JOSEPH TOYNBEE, F. R. S.—The author pointed out the objections to the two ordinary modes of exploring the Eustachian tubes—viz. that the use of the catheter is liable to produce pain and discomfort; that, without experience, it is not easy to ascertain whether it be really in the tube; that the plan of attempting to distend the tympanum by a forcible expiration, while the mouth and nostrils are kept closed, is not always successful, from the fact that the young and nervous cannot be taught to perform the act, and that sometimes, when it is properly done, the guttural orifices of the tubes seem to be pressed together so as to preclude the air from entering. In a paper recently read before the Royal Society, the author endeavored to show that the guttural orifice of each Eustachian tube is generally closed, and that the air in the tympanum is not continuous with that in the cavity of the fauces, except during the momentary act of deglutition. In proof of this the following experiment was cited: If the mouth be shut, and the nostrils be held closed by the finger and thumb, and then the act of swallowing be performed, a sensation of fulness or pressure is experienced in each ear; and this sensation does not disappear upon the removal of the pressure from the nose, but it vanishes at once when the act of swallowing is again performed, while the mouth and nostrils are open. During the first act of swallowing, a small quantity of air was forced into the tympanitic cavities through the Eustachian tubes, and it therein remained until the second act of swallowing again opened the tubes and permitted the air to escape. The muscles whereby the Eustachian tubes are opened are the tensor and levator palati, which it is well known take origins from the cartilaginous walls of the tubes. As, during the act of swallowing with closed mouth and nostrils, air is forced through the Eustachian tubes into the tympanitic cavities, it is evident that the permeability of these tubes can be ascertained by making the patient swallow ssme saliva while the mouth and nose are shut. Nor need the surgeon depend upon the statement of the patient respecting the sensation of distension felt in the ears; for, by listening with the *otoscope*, should the Eustachian tubes be pervious, the air will be distinctly heard to enter the tympanitic cavities, and produce a gentle crackling sound. The author next proceeded to consider the treatment of cases of obstruction of the Eustachian tubes, especially in reference to the use of the catheter. It having been ascertained that these tubes are obstructed, is it desirable to attempt to open them by means of the catheter? Believing that obstruction in the Eustachian tubes generally depends upon a thickened state of the mucous membrane covering the guttural orifice, and that this state is always associated with a thickened condition of the faucial mucous membrane and of the mucous membrane of the tympanum, the author suggests—especially to those inexperienced in the

use of the catheter, not to attempt to pass this instrument—firstly, because, in such cases, the mucous membrane of the Eustachian tube is often so tumefied that no ordinary degree of pressure will force the air into the tympanum; and, secondly, because, should the surgeon succeed in transmitting a few air-bubbles, the relief obtained is only partial and endures for a very brief period, since the mucous membrane remains as thick as before, and the ill effects of the obstruction soon recur, from the air in the tympanum becoming of a different density from that without. The membrana tympani becomes more or less fixed. The treatment recommended is such as shall tend to reduce the thickened mucous membrane of the guttural orifices of the Eustachian tubes to a healthy size, so that their muscles may be able to open them. For this purpose, besides the use of general remedies, the solid nitrate of silver, or a strong solution of hydrochloric acid, may be applied to the mucous membrane of the fauces and to the apertures of the tubes, and gentle counter-irritation is to be kept up over the region of the fauces. By these measures, as a general rule, the mucous membrane can be reduced to its natural state, and the tubes become again opened by their muscles. Should this not take place, the Eustachian catheter may now and then be introduced, and air be gently blown through it. A modification in the shape of the Eustachian catheter is suggested—viz. that it should be oval instead of round, the advantages derived being, that it not only can be passed through the nose with less discomfort to the patient, but its presence in the Eustachian tube is much less disagreeable from the absence of the convex surfaces which, in the rounded catheter, press against the nearly flat surfaces of the tube. In conclusion, the author expresses his concurrence in the opinion of Harvey and Kramer, that enlarged tonsils are never the cause of obstruction in the Eustachian tubes, and that any benefit that may have followed their extirpation has arisen from the loss of blood consequent upon the operation.—*Lancet.*

Diffuse Hæmatocele of the Spermatic Cord.—Under the above title we are desirous of placing together the particulars of two very interesting cases, examples of an affection of very infrequent occurrence, and involving some important practical points.

Case I. *Kick on the Groin.—Large Extravasation of Blood into the structure of the cord.—Expectant treatment.—Slow absorption of the effused blood.* Under the care of Mr. Stanley.—John Davis, aged 30, a tall, powerful man, was admitted on Dec. 15, 1851, on account of a large swelling on the left side of his scrotum. The tumor was the size of two fists, pyriform in shape, its neck extending into the inguinal canal, very tense, with a smooth rounded outline, and equally solid feeling in all parts. It completely concealed the testicle and cord. The skin of the scrotum was distended, and of a purplish-red hue; it did not, however, adhere to the swelling, but might be pinched up from it. The man stated that he had on the previous day received a violent kick from a horse in the left groin, immediately after which swelling of the purse commenced, and, continuing to increase, attained, in the course of

six hours, its present size. The symptoms and history agreeing so well, Mr. Stanley felt no difficulty in diagnosing it as a case of extravasation of blood into the tissues of the spermatic cord, and he accordingly ordered the patient to be confined to the recumbent posture, and to keep a cold lotion constantly applied to the part. About ten days later, and before any apparent diminution in the size of the swelling had taken place, it was discovered that in the anterior and lower part there was a soft spot, and this, in the course of a few days, had become much more plainly evident. The sensation given to the finger was so like that of fluctuation, that several times the question of the propriety of making a puncture into it was mooted. Its performance was, however, deferred, and the swelling gradually diminishing in size from below upwards, it became evident in a short time that this false sense of fluctuation had been due, not to the presence of fluid but to that of the testis itself in a soft and healthy condition, held forwards by the solid mass of coagulated blood in which it was imbedded. The absorption of the blood proceeded but very slowly, and it was not until Feb. 1, that it was sufficiently accomplished to permit of the patient being discharged, and even at that time there remained considerable thickening of the cord, the other parts being left, however, in a perfectly normal state.

Case II. *Probable Injury to the Groin.—Large Extravasation of blood into the structures of the cord.—Treatment by mercury.—Slow absorption of the effused blood.* Under the care of Mr. Solly.—The following case, although similar to the preceding in its main features, was much complicated, as to diagnosis, by the history of an old standing hernia on the same side:

John Grady, a potman, aged 30, was admitted on Dec. 9, 1852. In the right side of his scrotum, the testicle and cord were concealed by an elongated swelling, the size of a fist, which extended from the most depending part of the scrotum into the inguinal canal. It was of smooth, tense and solid feeling, and the skin might easily be pinched up from it. No impulse was communicated to it by coughing. It was very difficult to arrive at a correct history of its appearance. On one occasion the patient confessed to having a few days before admission been so drunk that he did not know what happened to him, but this he afterwards strenuously denied. He had seven years ago suffered from a hernia on the same side, which was easily returned, and for which he wore a truss two years, when it appeared to be cured, and never again troubled him. The present swelling had, he stated, formed slowly during several days, *commencing from above.* During the first day he suffered much from pain and vomiting, but these symptoms soon subsided. As no indications of strangulated hernia were now present, Mr. Solly did not deem it advisable to perform any exploratory operation. He ordered the man to be confined to bed, to have twelve leeches applied to the scrotum, and to take a pill containing two grains of calomel and half a grain of opium every night and morning. On the following day the leeches were repeated, with the effect of much diminishing the inflammation of the part. The pills having, after five days' employment, induced salivation,

were then discontinued. After the lapse of about a fortnight, there was found in the lowest part of the swelling just such a softened spot as we have noticed in the foregoing case, and suspicions were strongly excited of the existence of fluid. As absorption was going on very slowly, Mr. Solly ordered the whole affected part to be enveloped in lint spread with mercurial ointment, under the influence of which a slight ptyalism again resulted, and the swelling continued to diminish, from below upwards. It soon became evident that the soft part which had been felt, was due to the presence of the testis, as in the former instance.

The man left the hospital on Feb. 5, the lower half of the swelling having very nearly vanished, but the cord remaining extremely thick in the upper part and inguinal region.

There can, we think, be no hesitation as to the propriety of considering both the preceding cases as instances of the extravasation of blood within the fascia of the cord, consequent on the rupture either of the spermatic artery or of some of the veins composing the spermatic plexus.

The limitation of the swelling to one side of the scrotum, its rounded outline, pyriform shape, and non-attachment to the integument, all tend to prove that the blood was not free in the scrotal cellular tissue, but confined within some deeper membraneous tunic. The circumstance that the testicle was, in the first stage in each case, completely buried in the mass, is easily explicable by reference to the fact, that the infundibuliform fascia invests not only the cord and epidymis, but also the exterior of the tunica vaginalis: with the latter, however, its connexion is much more close than with other parts; and the small quantity of intervening cellular tissue accounts for the rapidity with which the effused blood (probably very small in quantity at first) became absorbed from that situation. Should extravasated blood, when in large quantity, as in the present cases, be evacuated by incisions? We have seen that its removal by absorption is a very tedious process, that it occupied in one case two months, and in the other six weeks (without being in either complete at the time of discharge;) yet taking all circumstances into account, we are convinced that it is one which should not be interfered with. All surgical authorities are opposed to the opening of collections of blood as a principle; and as it regards this situation in particular, there are on record some instructive cases. Through a mistaken diagnosis, *misled partly by the apparent fluctuation of the testicle below*, Mr. Freke was in one case induced to lay open the tumor, a large quantity of blood escaped, and the man ultimately did well. In a case which occurred to Mr. Pott, however, it was, after the incision, found impossible to discover the bleeding vessel, and castration was performed, on account of the alarming hemorrhage which ensued. Now, although we fully concur with the remark made in Mr. Curling's excellent work on the Testis, in allusion to the latter case, that "modern surgeons will not be inclined to admit that castration was the only remedy," yet the bare risk of such an expedient being necessitated, seems quite to overbalance the anticipated advantage in point of time.—*Lond. Med. Times & Gazette.*

Gastrotomy for Intestinal Obstruction. (Under the care of Mr. HANCOCK in Charing-cross Hospital.)—It occurs, unhappily but too often, that cases of unconquerable obstruction of the bowels are met with in our hospitals; and in casting a retrospective glance at our series of nosocomial reports, we find that we have had to record several cases of this kind. Another instance of intestinal obstruction has just taken place at Charing-cross Hospital, and we hasten to lay before our readers the particulars of the case.

Ann H——, aged 52, single, following the occupation of cook, and residing at Ham Common, was admitted on the 11th of February, 1853, under the care of Mr. Hancock. The patient had enjoyed very good health until ten months before admission, when she was suddenly seized with a severe pain in the bowels, which latter became much distended, and remained constipated for five days. She was attended by Dr. Hassall, and took various purgative medicines, without effect, up to the fifth day, when an enema was administered through a long tube (which the patient stated was passed some distance into the bowel), and the same evening a motion was passed. After this she appears to have improved, but has ever since been obliged to take aperients frequently to keep the bowels open, and has observed that the motions have been getting smaller—that is, long and thin, being at last about the size of her little finger.

About a month before admission, the patient began to suffer much from distension of the bowels, and considerable flatulence, which at times was so inconvenient that she was obliged to lie upon her bed until the flatus passed off. This state of things lasted for about a week, the bowels being at the same time rather constipated. Three weeks before the woman came to the hospital, she became so unwell that she was obliged to give up work and go to bed; and during the whole of that day and night she had violent vomiting and retching. An injection was administered during the day, and a motion passed. Enemata were given several times during the following week, with the same effect, the motions consisting of small scybala, the last one having been passed fifteen days before admission. At that time the motions, according to the patient's statement, had assumed the form of pills. Frequent vomiting took place up to the time of admission, when it ceased, and from this time it did not occur after food, but generally after taking any aperient medicine. The matter brought up was yellow, brown or greenish, and had a bitter, sourish taste, the smell not being particularly disagreeable.

The bowels had been much distended, and they were greatly so on admission. At times there was difficulty in passing urine, the latter coming away in small quantities. The patient did not suffer much pain except from borborygmi, which were relieved as soon as the flatus escaped, which at this period always occurred upwards, excepting after an injection, when a little passed downwards. No pain in any particular spot was complained of, excepting from a little distension about the umbilicus. The patient stated that the enemata did not appear to go beyond a certain point—a little above the crest of the left ilium; and

she thought that nearly a quart of injection has been retained at one time. She was bled the night before admission, and had calomel and opium. Mr. Hancock ordered two grains of calomel and a quarter of a grain of opium to be taken every second hour.

Second day: Pulse 108, rather small, but not particularly feeble; tongue furred, brown in the centre and red at the top and sides; surface warm; no perspiration; countenance not at all anxious. The spirits are pretty good, and the woman is tolerably cheerful. She does not sleep well; appetite very bad; abdomen tympanitic, supple and painless. There is rather a fæcal smell about the patient. Third day: pulse weak, 112; does not feel so well as yesterday, and is very low; is in great pain with flatus. She vomited a small quantity of yellow bitter matter this morning. Tongue more furred; skin cool and dry; urine passed freely.

A consultation was held at two o'clock, and it was decided to give an enema, and meet again at four o'clock. The enema was administered through the tube of a stomach pump, which was introduced in its whole length into the bowel, and about a quart of injection used, as no greater quantity could be employed. It returned, however, almost directly, untinged by fæcal matter, but accompanied by a small quantity of flatus. The temperature of the ward was raised as much as possible, and warmed sheets and towels provided, to cover the patient, should the operation be performed.

Fourth day, four P. M.: Nothing having passed from the bowels, and it being now the seventeenth day since anything had done so, the operation was decided upon, and chloroform administered. As there were not sufficient indications as to the situation of the obstruction, Mr. Hancock determined to commence by an incision in the median line from the umbilicus to the pubis; the intestines, distended by flatus, escaped through this opening, and were immediately covered by warmed towels, to preserve their temperature. The transverse colon being distended, the cause of obstruction was sought beyond, and found, without any difficulty, at the sigmoid flexure, in a portion of the bowel about an inch in length, constricted by a band about half an inch wide, but of so long standing as to have thickened the intestine and obliterated its canal. This band was divided, but the gut was so changed in structure and compressed, that it was evident the only chance of recovery consisted in opening the colon, and forming an artificial anus above the obstructed point. A transverse incision was therefore carried through the abdominal parietes, from below the umbilicus to the crest of the ilium on the left ssde, and an opening being made in the colon about an inch in length, the cut edges of the gut were attached by sutures to the margins of the integumentary wound; after which the intestines were returned into the cavity of the abdomen, the wound brought together by sutures, and the patient sent to her bed.

The patient bore the operation very well, her pulse remaining pretty good throughout, and being 126 at its termination. Stimulants were administered two or three times during the operation, which lasted forty

minutes from first to last; and a little brandy, with fifteen minims of laudanum, immediately after. Twelve P. M.: Pulse stronger, 126; surface of body cold; a large quantity of fæcal matter has passed through the opening; the patient complains greatly of pain in the part incised. Mr. Hancock saw her at nine o'clock, and as she then appeared extremely low, ordered her laudanum and ammonia, in camphor mixture, every four hours. The pain, which was most severe, now became less intense.

First day after the operation, eight A. M.: Mr. Hancock found the patient better; her pulse was fuller; skin warm, and covered with warm perspiration; bowels have acted very copiously during the night through the artificial opening, and the vomiting has ceased; pain has diminished, and the woman has had some sleep. Ten A. M.: not quite so well; pulse more feeble; in other respects much the same. Three P. M.: Much worse; is in great pain; countenance anxious; very restless; upper and lower extremities cold; pupils contracted; tongue dry and parched; pulse cannot be counted; can bear pressure without much increase of suffering. The patient died at a quarter past three o'clock.

No regular post-mortem examination took place, but it was easily ascertained that the obstruction lay principally in the locality which has been mentioned above.—*Lond. Medical Circular.*

"Les symptômes de l'épilepsie sont tellement extraordinaires., tellement au dessus de toute explication physiologique; les causes de cette maladie sont tellement inconnues, que," &c.

ESQUIROL.

"I think no disease is better understood than Epilepsy, since the application of the Physiology of the Spinal System to its Pathology."

THE AUTHOR.

THE PHYSIOLOGY OF EPILEPSY, AND OF PAROXYSMAL APOPLEXY, PARALYSIS, MANIA, &c.

BY MARSHALL HALL, M. D., F. R. S., ETC.

I. *General View of Epilepsia, Apoplexy, Paralysis, and Mania.*

1. Epilepsy,
2. Apoplexy,
3. Paralysis,
4. Mania, which may be but different phases of one and the same disease,—may each be arranged into—

Class I. The Paroxysmal—	Class II. The Permanent.
1. Of Inorganic Origin;	1. Of Organic Origin;
2. Of Recurrent Paroxysmal Form;	2. Of Permanent Form.
3. Of short Duration, terminating in perfect recovery, or	
4. Fatal, without post-mortem appearances, or	
5. With such as are Effects only.	

II. *Inorganic Epilepsy is—*

1. Spinal; with	2. Cerebral and Spinal; with	3. Spinal; with	4. Cerebral; with		
			Coma, &c.	Paralytic Laryngismus: Stertor;	Augmented Coma.
Trachelismus;	1. Vertigo, &c. 2. Spasmodic Affections;	Spasmodic Laryngismus; Dysecpnœa;			

III. *Inorganic Apoplexy is—*

1. Spinal; with	2. Cerebral; with			
	1. Vertigo, &c.	2. Coma, &c.	Paralytic Laryngismus; Stertor;	Augmented Coma;
Trachelismus;				

IV. *Inorganic Apoplexy and Epilepsy sketched:*

I. The Emotions; { Trachelismus; { The Epilepsia mitior; / The Apoplexia mitior;

II. The Irritations; { Laryngismus; { Spasmodic, { The Epilepsia gravior. { Laryngeal Dyspnœa. { Purpurescence; / Convulsion; / Congestion;

Paralytic; { The Apoplexia gravior; { Laryngeal Stertor; { Augmented Coma; / Congestion; / Death.

V. *Or—*

1. The Emotions; / 2. The Irritations; induce { Spasmodic / Trachelismus; { Threatenings of 1. Epilepsy; / 2. Apoplexy; or { Congestion of 1. The Medulla Oblongata / 2. The Cerebrum; with { 1. Spasmodic, or / 2. Paralytic, Laryngismus; and { 1. Convulsion, and its Effects; / 2. Stertor and augmented Coma.

VI. *Inorganic Epilepsy and Apoplexy are caused by*

Causes.	I. Acting through the Diastaltic Spinal System— I. The Mode of Action.	II. The Medium of Action.	II. Upon the Muscular and Venous Systems of the Neck, whence,—** I. Spasmodic Action— of	I. Trachelismus, with— Compression of
I. The Emotions— Excitement, Anger, Fright; Awaking; &c.	Catastaltic or Direct,— through*	II. Exodic Nerves; viz. 1. The Descendens Facialis— 1. The Descendens Myo-glossalis— 3. The Spinal Accessory— 4. The Spinal— (The Pneumogastric, with Palpitation, &c.)	1. The Platysma-myoid— 2. The Cleido-mastoid, the Omo-hyoid, &c.— 3. The Trapezius, the Scaleni, &c.— 4. The Subclavian—	1. The External Jugular— 2. The Internal Jugular— 3. The Vertebral— 4. The Subclavian—Veins, or Phlebismus—with Congestion; Effusion; Softening? Obstructed Arteries? &c.
II. Certain Physical Causes 1. Posture; Effort— Mental or Physical; Fatigue; &c, 2. Hyperæmia; Anæmia; Cachæmia; &c.				
III. Sleep—	Autostaltic,—in*			
IV. The Irritations— 1. Dental— 2. Gastric— 3. Intestinal— 4. Uterine— 1. Catamenial— 2. Puerperal—	Diastaltic or Reflex,— through 1. Eisodic Nerves; viz. 1. The Trifacial— 2. The Pneumogastric— 3. The Spinal—*	1. The Recurrent Laryngeal— 2. The Intercostal— 3. The Abdominal—	1. The Arytænoid— 2. The Intercostal— 3. The Abdominal—	II. Laryngismus. 1. Incomplete—with Stridor; &c. 2. Complete—with Efforts of Expiration, or Dysecpnœa; &c.

v. Venus nimia, præsertim solitaria.

* The Spinal Centre and

VII. *Inorganic Epilepsy, which may be divided into the—*

I. Epilepsia Mitior, and this into

I. Epilepsia Evanescens, with
- I. 1. Obscure Trachelismus;
- 2. Oblivium, Confusion, Vertigo; &c.
- 3. Distortion of the Eyes, Features, Fingers; &c. &c.
- 4. Nutatio; Falling; &c.
- 5. Faintishness;
- 6. Oneirodynia;

II. Epilepsia Trachelea, involving the Spinal Accessory, &c. with
- 1. Aura; Flocci; Tinnitus; Odor Moschi; &c.
- II. 2. Manifest Trachelismns—Fixed Head; Torticollis; Obstipitas;
- 3. Spasmodic Aura?
- 4. Laryngeal, Stridor, Cry, Dyspnœa;
- 5. Bitten Tongue, Lip, or Cheek;
- 6. Foam; Rattles; &c.

- 1. Flushing;
- 2. Stupor;
- 3. Falling with Violence;

Hidden Seizures;—Mania?—Crime?—Punishment!—even to Death!

II. Epilepsia Gravior, and this into

I Epilepsia Laryngea, involving the superior Laryngeal, &c. with
- I. Trachelismus;
  - 1. Purpurescence;
  - 2. Stupor; Coma;
- II. Spasmodic Laryngismus;
  - 1. Dysecpnœa;
  - 2. Convulsion, leading to
    - 1. Coma;
    - 2. Stertor, with VIII. II. II.
    - 3. Augmented Coma;
    - 4. Mania;
    - 5. Amentia;
    - 6. Spasmo-Paralysis;
    - 7. Death.

Superseded by Tracheotomy, precisely in proportion to the Laryngismus and its Dyspnœa; leaving at the most, an Epilepsia Abortica.

II. Epilepsia Syncopalis, with
- 1. Pallor; Lividity;
- 2· Syncope;
- 3. Sudden Death.

** Irritation of the Medulla Oblongata, and Congestion of the Cerebrum—

II.

VIII. *Inorganic Apoplexy, which may be divided into the—*

I. Apoplexia Mitior, and this into

I. Apoplexia Evanescens, with
- 1. Vertigo; Confusion;
- 2. Paralysis of Speech; of the Fingers; of the Side; &c. &c.

II. Apoplexia Trachelea, with
- I. Trachelismus, denoted by—
  - 1. Flushing, Purpurescence, and
  - 2. Tumidity, of the Face and Neck;
  - 3. Vertigo; &c.
  - 4. Stupor; &c. &c.
  - 5. Falling;
  - 6. Paroxysmal Paralysis.

II. Apoplexia Gravior, or Apoplexia Laryngea; viz.
- I. Trachelismus;
  - 1. Purpurescence;
  - 2. Cerebral Congestion;
  - 3. Stupor; Coma;
- II. Paralytic Laryngismus, with
  - 4. Stertor; from Paralysis by counter-pressure of
    - 1. The Medulla Oblongata, and thence of
    - 2. The Pneumogastric, and especially of
      - 1. The Recurrents; with
  - 5. Augmented Coma; of
    - 2. The Pharyngeals, with Dysphagia; of
    - 3. The Bronchial, with Râles, &c.
    - 4. The Cardiac;
    - 5. The Gastric, with Correlative Derangements;
  - 6. Death.

** Congestion of the Cerebrum, and—

II.

Augmented Spinal Excitability and Susceptibility to Attacks.

The Treatment should be

equally free from Empiricism in both; and

consist in

I. Avoiding the exciting Causes;

II. Giving
- 1. Antacids;
- 2. Gentle Emetics?
- 3. Gentle but efficient Aperients;

III. Attending strictly to Posture;

IV. Subduing Excitement by Hyoscyamus;

V. Subduing induced Susceptibility by Strychnia;

VI. Removing Organic Effects by Mercurials;

VII. Restoring the general Health, by Air and Exercise; &c.

and be founded on an adequate Diagnosis.

Are there any Specifics?

I.

anic Epilepsy and Apoplexy are caused by

nal System—

Medium of Action.

II. Exodic Nerves; viz.
1. The Descendens Facialis—
1. The Descendens Myo-glossalis—
3. The Spinal Accessory—
4. The Spinal—
(The Pneumogastric, with Palpitation, &c.)

1. The Recurrent Laryngeal—
2. The Intercostal—
3. The Abdominal—

II. Upon the Muscular and Venous Systems of the Neck, whence,—**

I. Spasmodic Action—

of

1. The Platysma-myoid—
2. The Cleido-mastoid, the Omo-hyoid, &c.—
3. The Trapezius, the Scaleni, &c.—
4. The Subclavian—

1. The Arytænoid—
2. The Intercostal—
3. The Abdominal—

I. Trachelismus, with—

Compression of

1. The External Jugular—
2. The Internal Jugular—
3. The Vertebral—
4. The Subclavian—Veins, or Phlebismus—with Congestion; Effusion; Softening? Obstructed Arteries? &c.

II. Laryngismus.

1. Incomplete—with Stridor; &c.
2. Complete—with Efforts of Expiration, or Dysecpnœa; &c.

ıay be divided into the—

II. Epilepsia Gravior, and this into

Epilepsia Laryngea, involving the superior Laryngeal, &c. with

I. Trachelismus;
1. Purpurescence;
2. Stupor; Coma;

II. Spasmodic Laryngismus;
1. Dysecpnœa;
2. Convulsion, leading to
1. Coma;
2. Stertor, with VIII. II. II.
3. Augmented Coma;

Superseded by Tracheotomy, precisely in proportion to the Laryngismus and its Dyspnœa; leaving at the most an

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